

The IRON AGE

October 2, 1958

A Chilton Publication

The National Metalworking Weekly

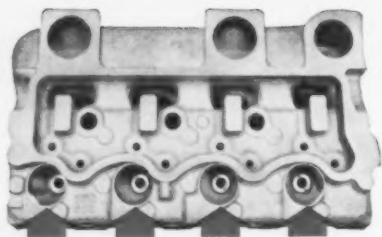


**New Line Ties In
Parts Handling For
Standard Tools P. 75**

**What Are Chances
For Labor Reform Laws? — P. 39**

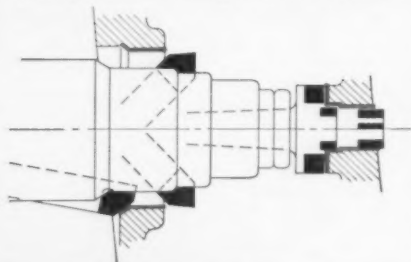
**Why Business Loans
Will Cost More — P. 44**

Digest of the Week — P. 2-3



MACHINES 21 CYLINDER HEAD SURFACES IN ONE PASS WITH DEPTH OF CUT BETWEEN $\frac{1}{8}$ " AND $\frac{3}{16}$ "

Rough castings are bored, plunge-faced and chamfered at a rate of 18 parts per hour. Tooling is shown below.



NEW!

Heavy-Duty Precision Boring Machine

From base to bridge-top, Ex-Cell-O's new Style 771 Precision Boring Machine is engineered to keep pace with changing production needs and built to give years of precise profitable performance.

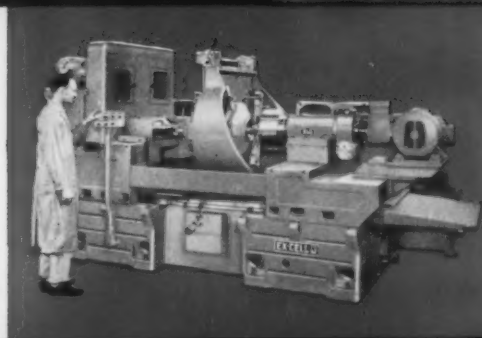
A specialist in fast, heavy-duty work such as the multiple machining operations detailed at left, the Style 771 (and the companion double-end Style 772) provides ample work space for complex tooling setups and bulky fixtures.

In-built versatility permits a broad range of rough, semi-finish and finish operations with automatic cycling. Rigid construction gives the "beef" needed for machining large, heavy parts, and supplies a wide margin of steadiness for high production of smaller precision parts.

Ex-Cell-O Precision Boring Machines can put greater precision into your products at lower per-unit cost. Get the full story from your local Representative, or write direct.

RIGHT: Style 771 machines both 4-and-6-cylinder tractor components. As cycle starts, table rapids to left, spindles rotate and feed traverse begins. At end of stroke, table rapids out to clear tooling; fixture indexes, cycle repeats for second set of holes.

BELOW: Double-end Style 772 performs multiple machining operations on tractor gear case cover.



EX-CELL-O FOR PRECISION

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BETHLEHEM'S NEW LEADED SCREW STOCK

IMPROVED MACHINABILITY

measured in—

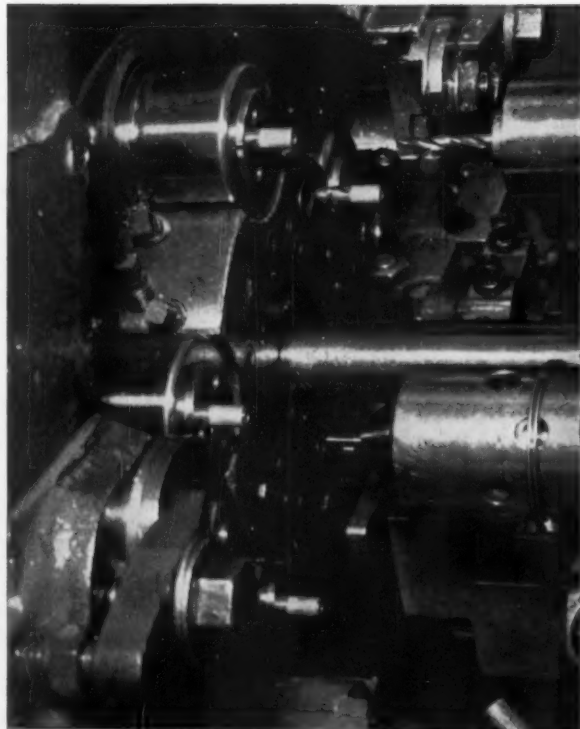
- *Faster Cutting Speeds*
- *Increased Tool Life*
- *Better Chip Control*
- *Smoother Machined Finishes*

These are all major advantages of swinging to Beth-Led, Bethlehem's new leaded screw stock—for faster production, greater profits.

Beth-Led is a high-sulfur carbon screw stock containing lead. And it's this lead content, added under rigid quality controls, which gives Beth-Led its many machining advantages. A change-over to Beth-Led will result in a superior quality product *machined at lower cost* on bar automatics.

Plan now to give Beth-Led a trial. Bethlehem leaded carbon screw stock is distributed through non-integrated cold-drawers . . . ask the one nearest you for full details. Or, contact our local sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



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THE IRON AGE
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The IRON AGE

October 2, 1958—Vol. 182, No. 14

Digest of the Week in

*Starred items are digested at right.

EDITORIAL

Problems at Home: They Are Important, Too 7

NEWS OF INDUSTRY

*Special Report: Hopes Fade for Labor Reform Laws	39
Simplified Strapping Saves Costs	41
*Defense Pins Its Hopes on Thor	42
Defense Contracts Shifting	43
*Interest Costs May Hit New High	44
Metalworking Gives to Education	45
*Engineers Told How to Cut Costs	46
*Reds in Trouble on Tin Dumping	47
Helping Business Is Big Business	48
The IRON AGE Salutes	53
Men in Metalworking	69

FEATURE ARTICLES

*Make Automatic Handling Pay	75
*Rare Earths Homogenize Ingots	78
*Boost Powder Metal Part Size	80
*New Hot Forging Press	82
*Choosing Clamps for Jigs, Fixtures	84
*Tests Probe Tolerance Limits	88
Epoxy Aids Turbine Builders	90

NEWS ANALYSIS

Newsfront	37
*Report to Management	55
Automotive	56
*Washington	61
*West Coast	63
Machine Tool	65

MARKETS & PRICES

*The IRON AGE Summary	109
*Purchasing	110
Steel Product Markets	112
Index to Prices	113
Iron and Steel Scrap Markets	114
Nonferrous Markets	118
Clearing House	128

REGULAR DEPARTMENTS

Fatigue Cracks	11
Technical Briefs	92
Materials Roundup	94
New Equipment	103
INDEX TO ADVERTISERS	134

NEWS ARTICLES

LABOR REFORM LAWS

Hopes Fade—The Labor Dept. will repropose Ike's 1958 labor reform program in the next session of



Congress. But an expected larger Democratic majority dooms it to congressional pigeonholes. P. 39

THOR GETS THE NOD

Year-long Debate Ends — Defense Secretary McElroy rules for Thor as the nation's intermediate-range missile. Here's the background story. P. 42

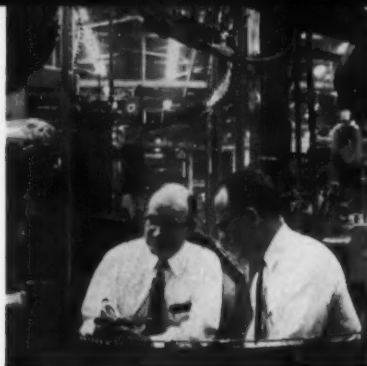
BUSINESS LOANS

Cost Going Up — Interest costs on borrowed money are expected to hit a 1957 peak in the last quarter. The current 4 pct rate may zoom a full point to 5 pct. P. 44

STEEL ENGINEERS

Cost-cutting Discussed — Cost reduction as well as engineering developments were discussed at biennial meeting of iron and steel engineers in Cleveland. Direct re-

Metalworking



LET GRAVITY DO IT: The key to automatic handling between standard machines is gravity transfer of parts. E. G. Lommel, plant engineer (left), and R. R. Jensen, master mechanic, of GM's Detroit Transmission Div. examine a part handled by the transfer setup installed by F. Jos. Lamb Co. P. 75

duction and vacuum pouring high-light sessions. P. 46

BIG FOURTH QUARTER

Help from Detroit—Word that automakers are planning some of their biggest fourth quarters in history adds steam to the recovery. Barring labor troubles, full production will build up in October for most automakers. P. 55

FEATURE ARTICLES

RARE EARTHS

Homogenize Ingots—Two recent Russian articles supply some basic data on the effects of rare earths in iron and steel. Tests in this country confirm the effects on melting point of iron sulphides. It was also concluded that rare earths help improve transverse ductility. P. 78

POWDER METAL PARTS

Join with Silver Solder—A practical method for bonding powder metal makes possible much larger ferrous and nonferrous parts. The process uses silver solder for permanent joints with tensile strengths matching those of the parent materials. P. 80

HOT FORGING PRESS

For Automation Age—A 2500-ton impression die machine makes 40 strokes per minute, banging hot blanks into finished and trimmed forgings at the unheard of rate of 2400 per hour. With only a single "observer" in attendance, the unit

will match the output of two or three conventional presses. P. 82

FOR JIGS AND FIXTURES

Which Clamps Are Best?—Strap clamps may be classified according to the means of applying pressure, form of construction, and the manner of operation. The right clamps for a job depend on the shape of the work piece and the time it takes to clamp and unclamp. P. 84

TOLERANCES

Tests Probe Limits—Electronic developments have created demands for metals rolled ultra thin. A program is exploring the ultimate capabilities of equipment to measure in millionths. P. 88

MARKETS & PRICES

WORLD TRADE

Lures Farwest Ports—West Coast harbors which handle 11 pct of all U. S. shipping are still on the prowl for more cargoes. They're modernizing marine facilities in drive for overseas business P. 63

NEXT WEEK

CARS OF THE FUTURE

What's Coming—Idea cars like GM's Firebird III give some hints of new developments coming in the auto industry. Next week's special report brings you an inside look at major changes in the foreseeable future in automotive styling and design.

TURMOIL IN TIN

Reds Responsible—Russia's tin dumping upset Free World markets, but cost too much in lost prestige. Here's how they are scrambling to mend their fences. P. 47

INFLATION

More Coming—Administration brass admits that "controlled inflation" is in the cards. Big problem is to keep pressure from getting out of hand. P. 61

THE REAL THING

Steel Upturn Is Solid—Even the more cautious steel salesmen are convinced now that the market upsurge is on solid ground. Cold-rolled sheet delivery promises are now out to five weeks. P. 109

INDUSTRIAL SCALES

Orders Increase—Scale builders are confident they have weathered the recession. A second quarter gain in shipments has encouraged many to believe total 1958 sales will equal 1957 levels. P. 110





**"B&W's Mr. Tubes gives me the
'extra' help I need to engineer for profit!"**

YOU CAN ENGINEER FOR PROFIT by keeping your piping costs as realistic as possible. Specifying and buying welding fittings and pipe, especially the alloys, can be pretty tricky. Admittedly, most alloy jobs are, inherently, both complex and expensive. Any error in judgment can throw costs way out of proportion. That's why it pays to call in B&W's Mr. Tubes. Put him on your planning team . . . he's the man that can help make your specifying decisions more certain.

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And, through Mr. Tubes, you can save both time and money by utilizing B&W's "one-source" supply. You get a matched piping system — both pipe and

fittings, in the materials you need — when you need them. Buying and delivery are more closely controlled, too. Check with Mr. Tubes on your next job. He can be reached at any B&W Tubular Products Division District Sales Office. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pennsylvania.



TA-8032-G5

Seamless welding fittings and forged steel flanges, seamless and welded tubular products, solid extrusions — in carbon, alloy, stainless steels and special metals.



*a dynamic philosophy
for American industry today*

PROJECT ALERT

The purpose of this project is to establish a creative attitude of *dynamic alertness* on the part of all personnel in American industry.

Dynamic alertness is alertness on the move . . . is a positive, constructive way of thinking . . . a spirited new attack on your problems. It is swinging into action to get things done today . . . to insure a brighter, more prosperous future.

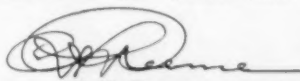
Three key words express the attitude of *dynamic alertness* . . .

- 1. Observation:** This means inspiring your people to look at your problems with curiosity and creative imagination. It is taking a walk through your plant and looking at things as though you are looking at them for the first time. It is cutting through the fog of complacency and seeing things with new eyes. It is looking for new ways to stop leaks and losses; searching for new ways to speed production and efficiency.
- 2. Concentration:** This means the intense application of the mind power of everyone to specific problems. It is the starting of new creative fires in your organization. It is having key people ask themselves key questions: How can I do my job better? How can I speed the flow of work? How can I cut down on errors? It is applying individual and group thinking to a list

of things to be done and sticking with them until they are finished. It is preparing today to solve the problems of tomorrow.

- 3. Devotion:** This represents a new vital spirit of re-dedication to your company, to your customers, to your industry, to America. It is a return to the creative ingenuity that made this nation great . . . finding a way or making one. It is having the power and purpose to go forward, to believe in the future, to move ahead to better things.

We at Udylite believe in Project Alert. All of us, to a man, are pledged to a policy of dynamic alertness in every facet of our jobs . . . in our contacts with fellow workers . . . in the handling of equipment . . . on the production line . . . in our contacts with suppliers and customers.


C. H. Reeme, president
The Udylite Corporation

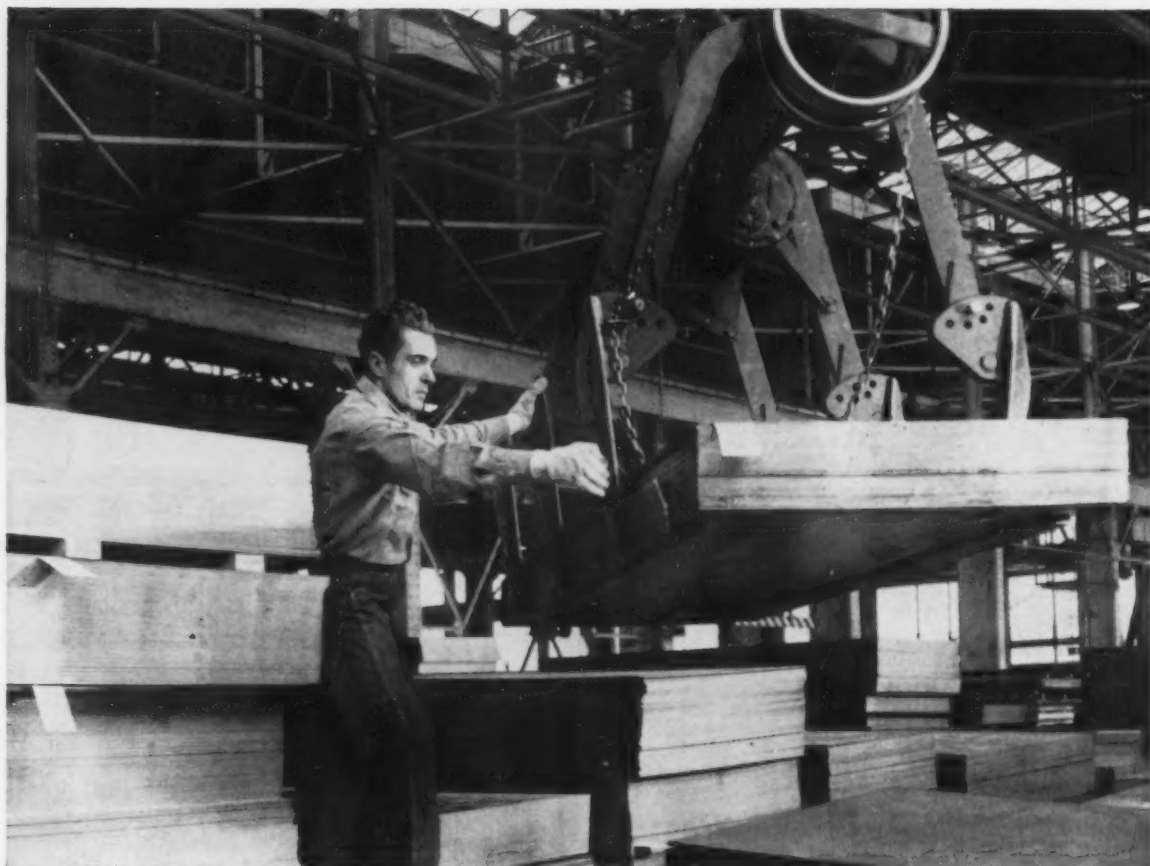

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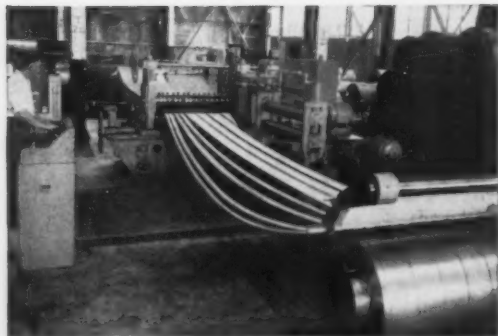
Apply this dynamic philosophy to your firm. New, fresh creative imagination, newer, better production methods, never more reliable equipment applied to the job now . . . will pay off in a brighter, more prosperous tomorrow. Write for a free copy of the Project Alert folder and a free Project Alert lapel button. There's no obligation, of course.





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Now... reduce sheet-forming costs with Ryerson quality-controlled steel



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This means you can minimize, or even eliminate, the problems of variation in forming and welding quality—caused by the average wider range of carbon content.

You'll also find Ryerson prepared to give you fast, accurate service on your special requirements: strip and sketch cutting, blank shearing, edging, coil slitting, etc.

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Problems at Home: They Are Important, Too!

Amidst our latest war scares let's remember we have problems at home. Some are just as urgent as are the "bigger" ones around the globe.

We have had so many crises for so many years that it seems to be our way of life. When we have to sit down and think about our everyday tasks upon which depend many of our successes it seems to bore quite a few of us.

Of course, we must protect ourselves and our allies from the machinations of a Red world domination policy. We know it costs money to keep ahead in that game. But with the Reds being so adept at having us rush all over the world at their bidding—without any cost to them—we should pause in our flight. Too many tangents in the future won't be good for us.

Regardless of the "global" picture there are important "small" ones that need our attention. A nation which can't pay its bills and live within its income in peace-time can hardly expect to retain its freedom following a war it might be shoved into by circumstances. Without a war, a checking account with insufficient funds isn't any way to run a country either.

Our national deficit is a dull subject for many of us. It may reach \$12 billion (who knows

what a billion really is?) this fiscal year. And next year we may be in the red \$3 to \$5 billion. Let's not blame the recession.

By hard work and sticking to the old-fashioned policy of not trying "to spend our way out of debt," this Administration did show some surpluses in the biggest boom years. But it was a tough job: There were many dead cats thrown around by people who wanted a spending orgy.

If we had trouble keeping within our budget in good years and are knee deep in the red now, where does that put us? It means we simply are spending too much. This is an unpopular tack to take now that we are having recovery: No one is supposed to rock the boat.

Yet if we don't realistically review our military and non-military spending soon, how are we ever going to find our way back to a sane balanced budget—or at least one that does not threaten every few years or so to ruin us.

If we don't—as a nation and as individuals—cut the fat out of our national spending so as to be trimmed down for serious action when and if it should come, we may never be able to do it. If that time comes, the Reds will have easy pickings.

Tom Campbell

Editor-in-Chief

air circuitry:

a new term of importance to control engineers.

Air has come of age as a control medium. No longer is it confined to the simple jobs of pushing a clamping device, moving a lever, or blowing chips. No longer is an air circuit just a valve, reservoir, and cylinder. Today the most complex of industrial control problems can and are being solved efficiently with air.

Today, pneumatic circuits can be interconnected. They can be set to control a complex sequence of operations *automatically*. They can be combined with electrical circuits. There is *no* control problem you have that can't be solved successfully with air.

The new role that pneumatic control can play in industrial operations demands a new way of thinking about air control. It demands a new way to describe control by air—a new name that suggests some of its limitless control possibilities. That's why Westinghouse Air Brake Company is now using the term "air circuitry" to describe the application of air control to automation.

Westinghouse Air Circuitry, we realize, has to be more than *just as good as* your present means of control. It has to offer you *extra advantages*. And it does.

Chief among these is its extreme simplicity. The devices themselves are uncomplicated mechanical devices. They have few moving parts. They are easy to service by any mechanic. The circuit connections are made with pipe—and what could be simpler than that!

This extreme simplicity brings with it other important "pluses" for air circuitry. The simple equipment is unusually reliable—there are few moving parts to wear out or get out of adjustment. The devices are sturdy and durable. They require very little maintenance. What maintenance there is can be handled without the services of **highly trained technicians**.

Above all, remember: no means of control is as *safe* as air.

Air circuitry can help you simplify your control problems. It can help you get accurate answers to your automation problems on any industrial machine . . . in any industrial process. And Westinghouse Air Brake Company can help you with the engineering of a suitable system. Westinghouse has been in the control engineering business for 80 years now. It has been at the forefront of the development and improvement of air control equipment and its applications.

FREE BOOKLET: Where do you use pneumatic control? How do you use it? What are the fundamental concepts involved in its successful application to modern control problems? Two compact, clearly written booklets—prepared by the pneumatics specialists at Westinghouse Air Brake Company—contain the answers. Volume I is called "Basic Pneumatic Control." Volume II is called "Devices and Fundamentals of Air Circuitry." Send for your copies today. Or call the nearest Westinghouse Distributor; he's listed in the Yellow Pages under "Cylinders: Air."

WESTINGHOUSE AIR BRAKE COMPANY, INDUSTRIAL PRODUCTS DIVISION, WILMERDING, PA.

LETTERS FROM READERS

Forging Dollar

Sir—Both as president of my own company and as president of the Drop Forging Association, I am writing to compliment you highly on the 16-page article "How to Get More For Your Forging Dollar" which appeared in your August 21 issue.

This is an excellent job and one that customers of the nation's forging plants and personnel of the plants themselves will welcome.

Our company would like 500 copies of this article for distribution to its customers. Also, I am asking the headquarters office of the Drop Forging Association to let you know how many it will need for a mailing to association member executives.—G. R. Walker, Pres., Walker Forge, Inc., Racine, Wis.

Fast Grinding

Sir—The item on electrolytic grinding of throw-away insert tools in the Newsfront section of the August 28 issue was enlightening. Would it be possible to send me additional information on the subject?—F. Hurley, Maintenance Metallurgist, Steel Producing Div., United



"Never marry your secretary as I did—secretaries can read sales charts."

States Steel Corp., Gary, Ind.

■ For further information you may contact the Ryan Aeronautical Co., San Diego, Calif.

Russian Steel

Sir—We would like ten reprints of your article "The Russian Steel Industry" in the Sept. 4 issue. Apart from the interesting factual information it contains on the subject of Russian steel industry, we think everybody should be roused to the threat which present Russian economic policy contains for all of us.—Societe Commerciale Des Mines, Minerais & Metaux, Brussels, Belgium.

Same Source

Sir—Please tell us where we may

obtain more information on the new plating process for coating porous parts which you mentioned in The IRON AGE Newsfront of the Aug. 7 issue.—W. B. Harding, Materials Engr., Bendix Aviation Corp., Kansas City, Mo.

Sir—Referring to your issue of July 31 we are interested in knowing what company or person has done the work on "strength in powder sheet."—W. V. Knopp, S-K-C Research Associates, Paterson, N. J.

■ For detailed information on both items write Dr. Samuel Storchheim, Metals Research & Development, Inc., Exeter, Pa.—Ed.

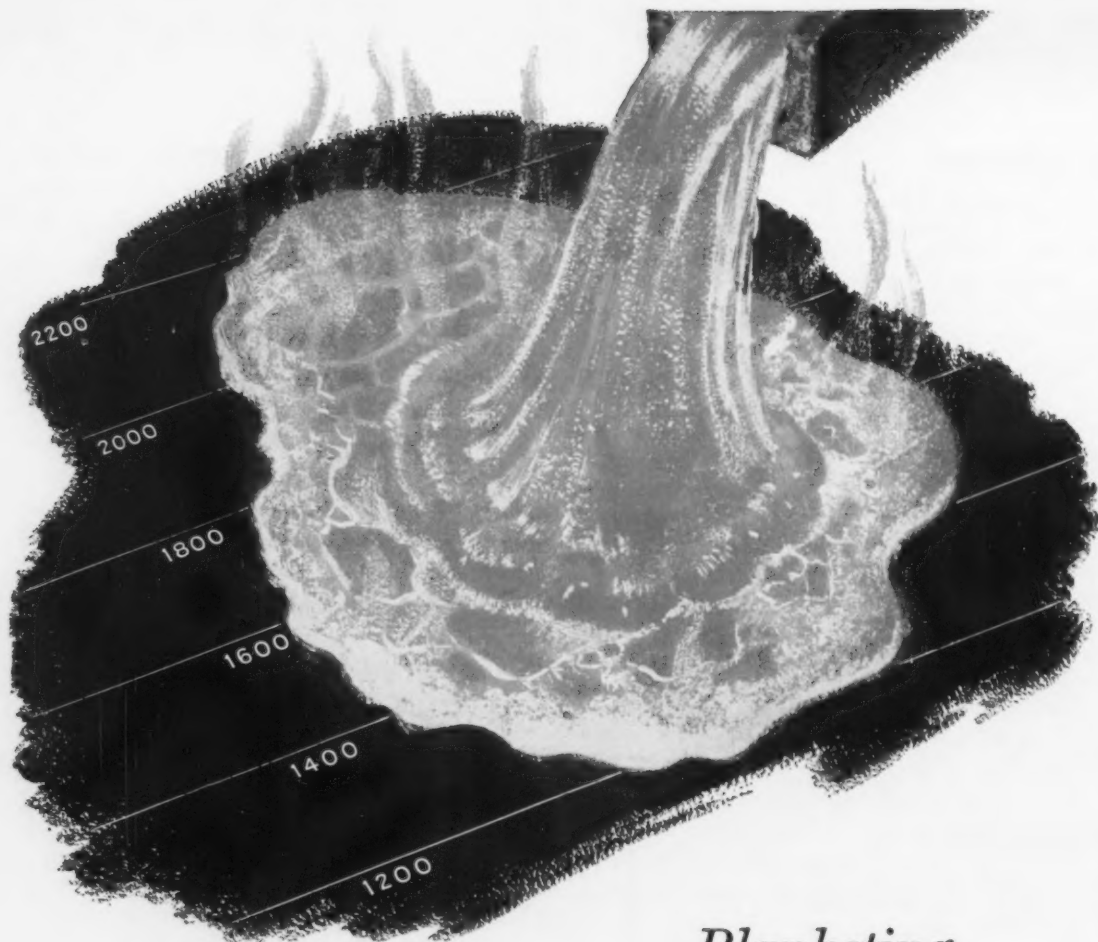


An ARMSTRONG Wrench feels right—is balanced. It goes over nuts or screw heads easily, grips firmly without sloppiness, won't round corners—because openings are carefully machined to correct sizes. It's safe, strong beyond need without clumsy bulk—because of superior design and selected steels, heat treated to proper degree of hardness and tensile strength. It's quality finished. ARMALLOY (alloy steel) Wrenches in chrome plate with heads buffed; HI-TEN

(carbon steel) Wrenches in baked-on gray enamel with heads ground bright . . . all plainly marked for size. All are uniformly excellent tools manufactured under strict quality control, by modern methods, with modern equipment in a modern tool plant . . . 1537 different industrial sizes and types—single wrenches, or sets in metal cases, boxes or rolls . . . each a quality tool. Armstrong Wrenches are "Fine tools that encourage good work."

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Blanketing the high temperature field



Close control is exercised over every step in the production of HAYNES alloys. This electric arc furnace is part of the modern mill set-up maintained at HAYNES STELLITE.

A fairly ambitious claim! Yet we can prove that HAYNES alloys do exactly that . . . all the way up to 2000+ deg. F. Here's why. There are 12 HAYNES high-temperature alloys. Among them you will find the right combination of properties to handle any heat condition. For example, HASTELLOY alloy X has remarkable resistance to oxidation up to 2200 deg. F. HAYNES alloy No. 25 is strong and resists stresses, oxidation, and carburization up to 2000 deg. F. HASTELLOY alloy R-235 is outstanding in the 1500 to 1750 deg. F. range. And this is only part of the story. All 12 HAYNES alloys are *production* alloys and are readily available. Some of them are vacuum melted; some air melted. Some are cast, some wrought, and some are produced in both forms. For the full story, write for literature.

HAYNES

ALLOYS

HAYNES STELLITE COMPANY
Division of Union Carbide Corporation
Kokomo, Indiana



The terms "Haynes," "Hastelloy," and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

FATIGUE CRACKS

Past and Future

How does that quotation go? "The moving finger writes and having writ moves on."

Anyway, it sure does. Editor Robert Schulin found evidence of that while looking at picture possibilities for his story on labor reform in this week's issue.

Buried in a stack of photographs he found the Wide World picture below taken in 1955 when the late Senator McCarthy's committee was investigating the Army. After iden-

tifying Sen. McCarthy and Sen. John McClellan (center), the caption continues, "Man at extreme left is not identified."

But time has marched on. Sen. McCarthy is gone. Sen. McClellan is now committee chairman. And the unidentified Robert Kennedy is now widely identified as counsel for the Senate's investigating subcommittee.

But what's past is past. For what Congress and the Administration will do about labor reform in the next session we recommend the story on p. 39.



Busy Ivan

The Russians are persistent. That's why, despite attempts in years gone by to prevent distribution of *The IRON AGE* in the USSR, the Russians are able to keep up on the latest in metalworking.

Just a few months after publication "copies" of all *IRON AGE* issues are on file in the library of the Polytechnic Institute in Leningrad. These copies are a "made in Russia" version of *IRON AGE*—prepared by photo off-setting the original magazine.

The thorough Russians reproduce the entire issue, including all the advertisements. We'll wager, however, that the technical feature articles get more attention behind the Iron Curtain than does *Fatigue Cracks*.

This peek at how Ivan keeps up-to-date on metalworking was re-

lated to us by Dr. Claus G. Goetzel, senior research scientist in the Metallurgical Laboratory at N.Y.U. Dr. Goetzel was one of a group of metallurgists who traveled in the Soviet Union. He also authored an *IRON AGE* article—"Where Is Russia Headed in Metalworking?"

Gold, Anyone?

Well, they've gone and done it. You've heard of gold-plated Cadillacs. Now it's gold-plated tools.

Herbrand Tools Div. of the Bingham-Herbrand Corp. has come up with a set of combination wrenches which are plated in 20 karat gold. Named the "500" set, they commemorate the 10th straight year the company has been exclusive supplier of wrenches for the 500-mile Indianapolis speedway race in May.

Atlas

INDUSTRIAL FLOORS STOP CORROSION



... in pickling and plating rooms!

Atlas Industrial Floors in your pickling and plating rooms will permanently stop corrosive attack . . . not merely retard or control it. They are resistant to the widest range and concentrations of acids, alkalis, salts and solvents.

These floors are constructed of acid brick laid on an impervious membrane and joined with Atlas corrosion-proof cement. There is a wide choice of cements available . . . each to solve a specific problem.

Atlas floors are engineered to withstand all types of physical abuse from heavy static loads to constant truck traffic.

Make an Atlas Floor your permanent corrosion-proof base for operations.

Write for Bulletin 3-3 giving complete details.

**ATLAS
MINERAL**
PRODUCTS COMPANY
MERTZTOWN, PENNSYLVANIA

**You have never used abrasive
like this new**

ROTOBLAST[®] STEEL SHOT

1 Vacuum Casting

Electric furnace alloy steel, shotted in revolutionary new vacuum chamber for greater density, eliminating the voids and defects encountered in conventional steel shot. Gives you a fatigue resisting shot of much longer wear life.

2 Continuous Heat Treating in Controlled Atmosphere

Nothing like it in the industry. Uniform heating of every particle, in zero oxygen atmosphere. For the first time . . . ball bearing heat treating quality in a tonnage product . . . gives you uniform hardness and longer life.

**New Rotoblast Steel Shot gives you much faster cleaning
and the lowest blast cleaning cost ever!**

Order some today and see for yourself! Call the Pangborn Engineer in your area or write PANGBORN CORP., 1500 Pangborn Blvd., Hagerstown, Md.



Pangborn

Rotoblast Steel Shot

COMING EXHIBITS

Packaging & Materials Handling Show—Oct. 14-16, Coliseum, Chicago. (SIPMHE, 327 LaSalle St., Chicago 4.)

Metal Show — Oct. 27-31, Public Auditorium, Cleveland. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Plastics Show—Nov. 17-21, International Amphitheater, Chicago. (The Society of the Plastics Industry, Inc., 250 Park Ave., New York 17.)

MEETINGS

OCTOBER

National Assn. of Sheet Metal Distributors—Fall meeting, Oct. 5-8, Marlborough-Blenheim Hotel, Atlantic City. Society headquarters, 1900 Arch St., Philadelphia.

Truck Body & Equipment Assn., Inc.—Annual convention and exhibit, Oct. 6-8, Ambassador Hotel, Atlantic City. Society headquarters, 1616 K St., N. W., Washington, D. C.

Gray Iron Founders' Society, Inc.—National annual meeting, Oct. 8-10, Sheraton-Park Hotel, Washington. Society headquarters, 930 National City-E 6th Bldg., Cleveland.

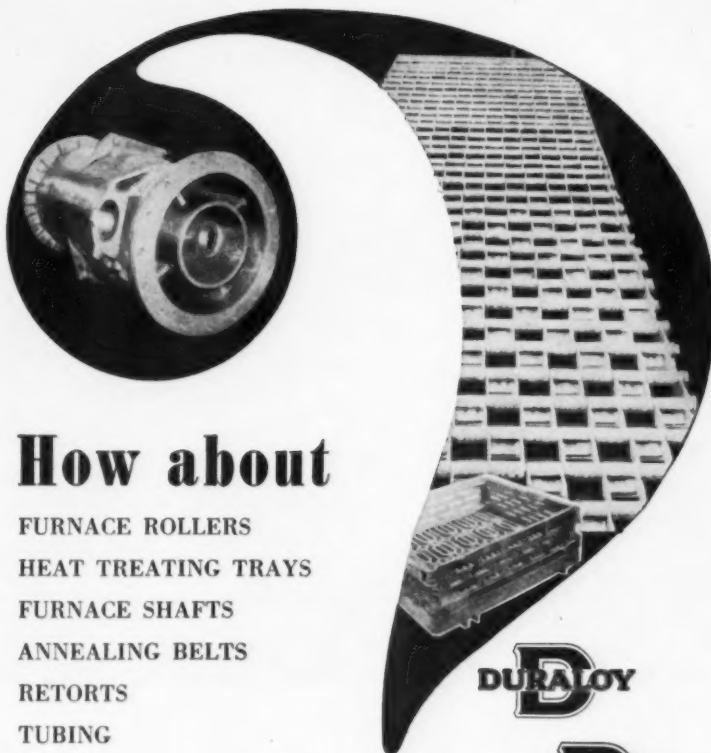
National Assn. of Waste Material Dealers, Inc.—Fall meeting, Oct. 9-12, Shelburne Hotel, Atlantic City, N. J. Society headquarters, 271 Madison Ave., New York 16.

The Wire Assn.—Annual convention, Oct. 13-16, Chalfonte-Haddon Hall, Atlantic City. Society headquarters, 543 Main St., Stamford, Conn.

American Society of Civil Engineers—Annual convention, Oct. 13-17, Hotel Statler-Hilton, New York. Society headquarters, 33 W. 39th St., New York 18.

Hoist Manufacturers Assn.—Membership meeting, Oct. 14, Warwick Hotel, Philadelphia. Society headquarters, One Thomas Circle, Washington 5, D. C.

(Continued on P. 16)



How about

FURNACE ROLLERS

HEAT TREATING TRAYS

FURNACE SHAFTS

ANNEALING BELTS

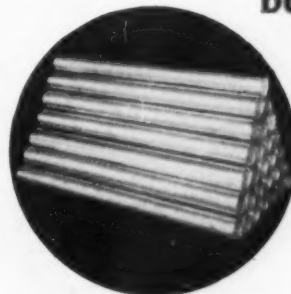
RETORTS

TUBING

Which are
Heat Resistant

Corrosion Resistant

Abrasion Resistant



When ready to order, how about checking with us here at DURALOY? For more than thirty years we have specialized in high-alloy castings. In fact, we were among the first to produce static castings and the first to produce centrifugal castings. We are old hands at producing castings alloyed to fit each specific requirement and to finish them to any extent desired.

Melt, castings and finishing are carefully controlled and quality tested by our staff of metallurgists, chemists, X-ray and gamma-ray technicians. If you would like more preliminary information, send for Bulletin No. 3150-G.



DURALOY Company
OFFICE AND PLANT: Scottsdale, Pa.

EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.

ATLANTA OFFICE: 76—4th Street, N.W.

CHICAGO OFFICE: 332 South Michigan Avenue

DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.



**KEEPS CUTTING FLUIDS
AS FRESH AS A DAISY**

Here's why **ELCIDE 75™** can increase the useful life of your soluble oil emulsions

Elcide 75 controls harmful bacteria that enter all oil-water emulsions and cause rancid odor, acidic corrosion, and emulsion breakdown. Prior to the development of Elcide 75, certain bacteria developed immunity to commonly used germicides, and no single inhibitor could control their damage.

Elcide 75 is a combination of proven anti-bacterial agents, including one of the safest and most powerful bacterial inhibitors used in the exacting field of medical surgery today.

Elcide 75 is not a "built-in additive" that is weakened by larger emulsion ratios. With Elcide 75 you know you have an effective, safe treatment because you add it to the emulsion right in your own plant.

Elcide 75 is completely safe for employees, machinery, and products. Not only is it non-

toxic and harmless to sensitive skin, but its anti-bacterial action reduces the chance for infection caused by contaminated emulsions. The use of Elcide 75 also reduces the acidic corrosion caused by bacterial decomposition.



Bacteria cause emulsion trouble. This is a photomicrograph of *Pseudomonads*, one of the harmful types of bacteria found in oil-water emulsions. They enter the emulsion through the air, water, and plant debris, and make it possible for sulfate-reducing bacteria to cause odor, corrosion, and emulsion breakdown. Elcide 75 controls a much wider range of these and other types of damaging bacteria.

WHAT ELCIDE 75 MEANS TO THE METALWORKING INDUSTRY...

Operating costs can be greatly reduced because of Elcide 75. This saving is an accumulation of several important benefits.

Actual shop tests have shown that one ounce of Elcide 75 added to each four gallons of emulsion can keep the oil-water emulsion fresh as much as 5½ times longer. In one test, emulsions that normally had to be dumped at the end of four weeks ran for 22 weeks when treated with Elcide 75!

You can benefit by three direct savings—costly labor and down time for recharging will be

reduced, your soluble oil requirements will drop, and the disposal cost of spoiled emulsions will diminish.

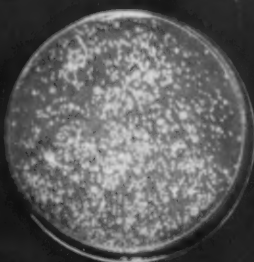
Elcide 75 also contributes to better products and longer machine tool life because it controls the bacteria which often cause acidic corrosion.

You can have a cleaner plant by using Elcide 75. It eliminates objectionable odors as well as bacteria that may cause skin infection. Elcide 75 is nontoxic and safe to use, as proved by tests conducted under normal shop conditions.

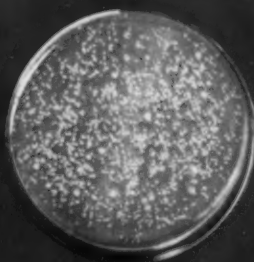
BACTERIAL PLATE COUNTS PROVE KILLING POWER OF ELCIDE 75



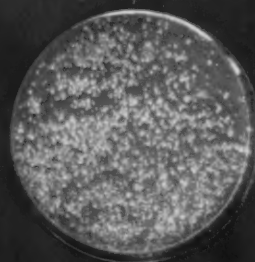
Emulsion treated with Elcide 75



Emulsion treated with commonly used germicide at recommended level



Emulsion treated with commonly used germicide at double the recommended level



Untreated emulsion

The photographs shown above illustrate the broad, powerful anti-bacterial action of Elcide 75. The light areas are bacterial colonies that have grown in three of the emulsion

samples during 8 weeks' use. Note that none of these harmful bacteria appear in the emulsion treated with Elcide 75 during the same 8-week period. The emulsion stayed fresh.

PUT ELCIDE 75 TO WORK FOR YOU

The best way to determine the value of Elcide 75 to your own operation is to try it under normal plant conditions, using your regular oil-water emulsion. After you compare the costs of operation, you will agree that Elcide 75 is a valuable discovery that deserves a permanent place in your plant. Why not try Elcide 75 soon?

ELCIDE 75



PRODUCT SPECIFICATIONS ELCIDE 75

(Lilly's brand of bacterial inhibitor for cutting fluids)

Active Ingredients—Sodium Ethylmercuri Thiosalicylate (Thimerosal) and Sodium o-phenylphenate.

Package	Price per Gal.
1-gallon polyethylene	\$8.50
5-gallon polyethylene	\$8.00
55-gallon stainless steel	\$6.50

This product is sold only through selected distributors.

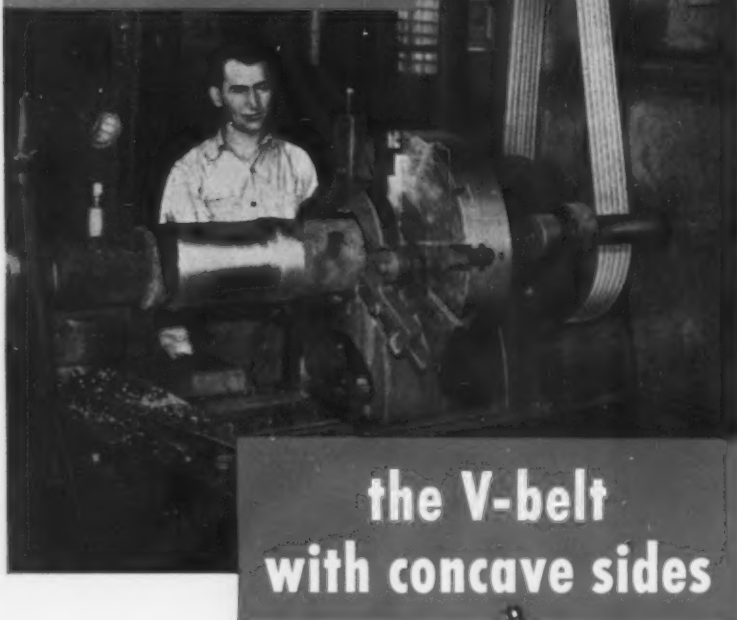
For further information or to place your order, write or phone:

ELI LILLY AND COMPANY, AGRICULTURAL AND INDUSTRIAL PRODUCTS DIVISION, INDIANAPOLIS 6, INDIANA

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Try this. Bend a Gates V-Belt as if it were going around a sheave. Feel how the concave sides (Fig. 1) *fill out*... become straight (Fig. 1A). This precise fit insures full contact with the sides of the sheave... grips the sheave evenly, distributing wear uniformly across the sides of the belt. Uniform wear lengthens belt life.

Make the same test with a straight-sided belt (Fig. 2). Feel how the sides of the bent belt *bulge out*, concentrating wear at points shown in Fig. 2A. Uneven wear shortens belt life; increases costs.

Because Gates V-Belts with Concave Sides are so universally preferred, they are also the *most widely available*. Gates V-Belts are carried by leading distributors in industrial centers throughout the world.

The Gates Rubber Company, Denver, Colorado



World's Largest Maker of V-Belts

TPA 342

Gates VULCO ROPE Drives

EXHIBITS, MEETINGS

(Continued from P. 13)

Wire Reinforcement Institute, Inc.

—Annual fall meeting, Oct. 14-15, Park Plaza Hotel, St. Louis, Mo. Society headquarters, National Press Bldg., Washington 4, D. C.

American Machine Tool Distributors' Assn.

—Annual meeting, Oct. 15-17, Sheraton Plaza, Boston. Society headquarters, 1900 Arch St., Philadelphia.

The Magnesium Assn.

—Annual convention, Oct. 16-17, Fort Shelby Hotel, Detroit. Society headquarters, Chanin Bldg., 122 E. 42nd St., New York 17.

Foundry Equipment Manufacturers Assn., Inc.

—Annual meeting, Oct. 16-18, Greenbrier Hotel, White Sulphur Springs, W. Va. Society headquarters, One Thomas Circle, Washington 5, D. C.

Conveyor Equipment Manufacturers Assn.

—Annual meeting Oct. 18-21, Greenbrier Hotel, White Sulphur Springs, W. Va. Society headquarters, One Thomas Circle, Washington 5, D. C.

American Coke & Coal Chemicals Institute

—Annual meeting, Oct. 20-21, Greenbrier Hotel, White Sulphur Springs, W. Va. Society headquarters 711 14th St., N. W., Washington, D. C.

Rail Steel Bar Assn.

—Semi-annual meeting, Oct. 20-22, Blackstone Hotel, Chicago. Society headquarters, 38 S. Dearborn St., Chicago.

American Society of Body Engineers

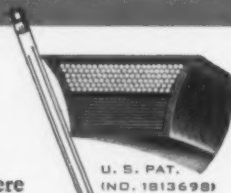
—Annual technical convention, Oct. 22-24, Rackham Memorial Bldg., Detroit. Society headquarters, 100 Farnsworth, Detroit.

American Gear Manufacturers Assn.

—Semi-annual meeting, Oct. 26-29, Edgewater Beach Hotel, Chicago. Society headquarters, One Thomas Circle, Washington, D. C.

American Institute of Steel Construction, Inc.

—Annual convention, Oct. 26-30, Greenbrier Hotel, White Sulphur Springs, W. Va. Society headquarters, 101 Park Ave., New York.





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Put Foote's Electromanganese to the "what-do-I-get-for-my-money test." Apply the same test to manganese alloys. Then compare results.

Here's about what you can expect. *With Electromanganese . . .* you get manganese and *only* manganese, 99.9+% pure! There's no carbon, no silicon. And you end up with a better product. You gain and your customers gain. *With manganese alloys . . .* you get the manganese, all right, but you also get impurities that can be harmful to your steel making process—especially if you're making low carbon aluminum killed auto steels, stainless, or

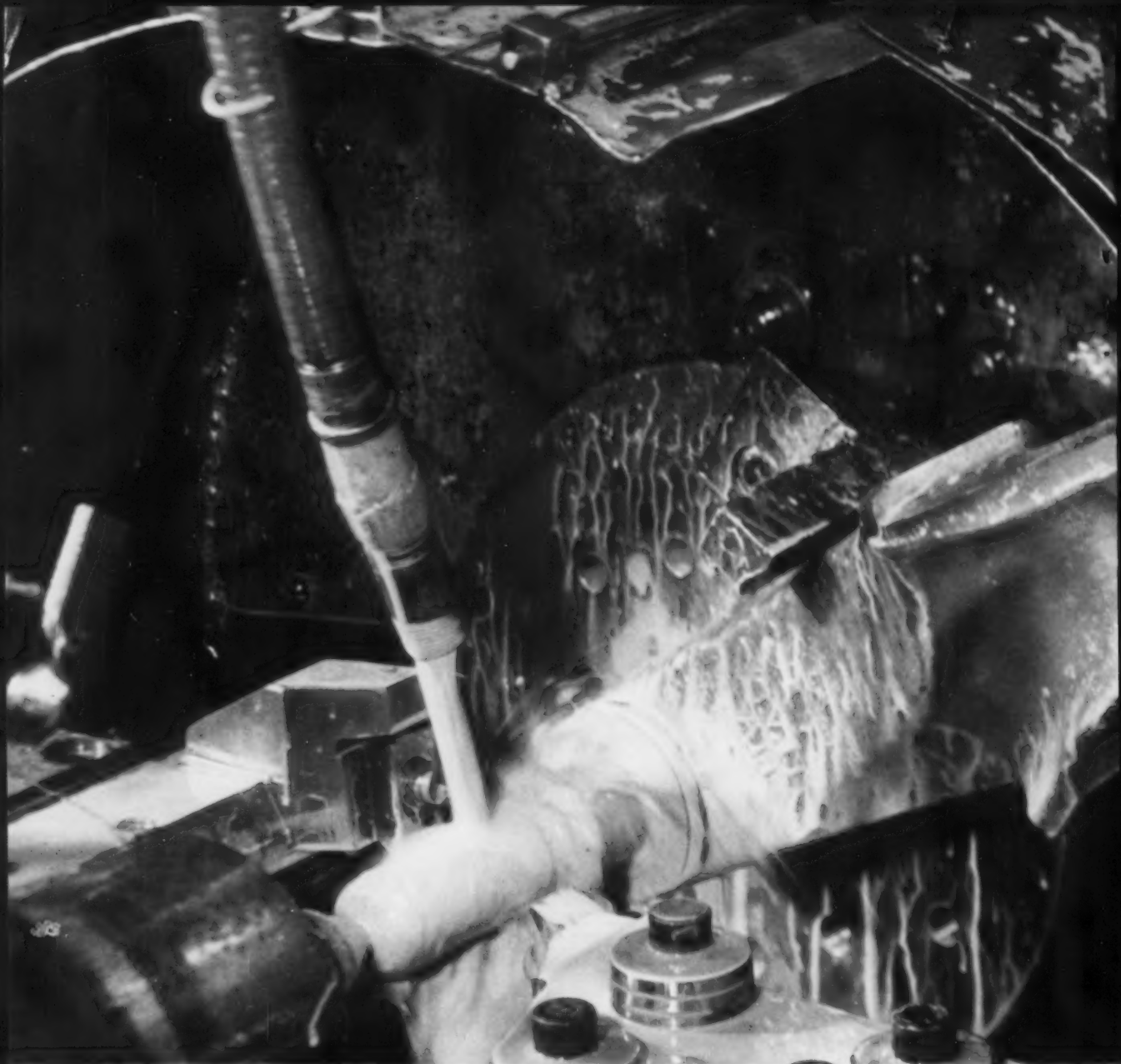
other steels where carbon and silicon control is critical.

Get the manganese you need in its *purest* form—Electromanganese. A Foote engineer is ready to tell you the whole story . . . help you work out what you might expect in your own plant. Until then, Bulletin 201 will give you more details on Electromanganese, the special Hydrogen-Removed Grade (H:7.5ppm), and Nitrided Grades. Write Technical Literature Department, Foote Mineral Company, 438 Eighteen W. Cheltenham Building, Philadelphia 44, Pennsylvania.



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Ups cutting oil life 12 times with Gulfcut . . . more proof that **GULF MAKES THINGS**

Not only the life of cutting oil, but the odor of it when rancid had once been a thorny problem in the Oil Tool Division of Reed Roller Bit Company, Houston, Texas, a major producer of oil well drilling tools.

Here's how they solved both problems with Gulfcut Heavy Duty Soluble Oil. Before they switched to Gulfcut, one department was changing cutting oils on the average of every two weeks. Reason: premature rancidity.

If the oil wasn't changed that often, the objectionable odor would become a personnel problem. Because it was changed that often, at least two man-hours were lost each time a machine was cleaned out. On top of this

was the unnecessary cost of replacing oil that frequently.

The previous oil also tended to "clabber up" in the storage drums, especially in cold weather. This made it difficult to prepare the coolant charges. Reed solved all these problems with Gulfcut Heavy Duty Soluble Oil.

They reduced the frequency of cutting oil changes from an average of every 2 weeks to an average of every 6 months. Gulfcut Heavy Duty gave them over 12 times the service life! They had no more trouble with rancidity or solidification in storage.

What's more, in a water-oil ratio of 10-to-1, Gulfcut Heavy Duty Soluble Oil gives Reed's machinists the



Proof in production. These components for the new Reed Y tri-cone drilling bit were precision-bored in a turret drill cooled and lubricated with Gulfcut H.D. Soluble Oil. Boring operation at 550 sfpm. Carbide tool speed: 1,675 rpm. Cutting oil life in this operation: 6 months.



The Gulf man is there. Gulf Representative Jeff Bolling, right, talks to Reed shop superintendent A. R. Whiltsie about the merits of Gulfcut Heavy Duty Soluble Oil—which is used in a total of 21 lathes and drills in the Lugs and Bridges Department. All of the work involves alloy steels.

RUN BETTER!

constant work temperature and lubricity they need—for accurate sizing and desired surface finishes.

How about your operation? Gulfcut Heavy Duty Soluble Oil cuts machining cost through: longer cutting oil life, increased tool life, finer finishes, closer tolerances—and freedom from rancidity, foaming and solidification in storage.

Get the full efficiency-economy story on Gulfcut Heavy Duty Soluble Oil now. See how Gulf makes things run better, operation-wise and cost-wise. Call a Gulf Sales Engineer at your nearest Gulf office. Meanwhile mail coupon for new illustrated bulletin.

GULF OIL CORPORATION

Dept. DM, Gulf Building
Pittsburgh 30, Pa.

Send me illustrated bulletin on Gulfcut Heavy Duty Soluble Oil.

Name

Title

Company

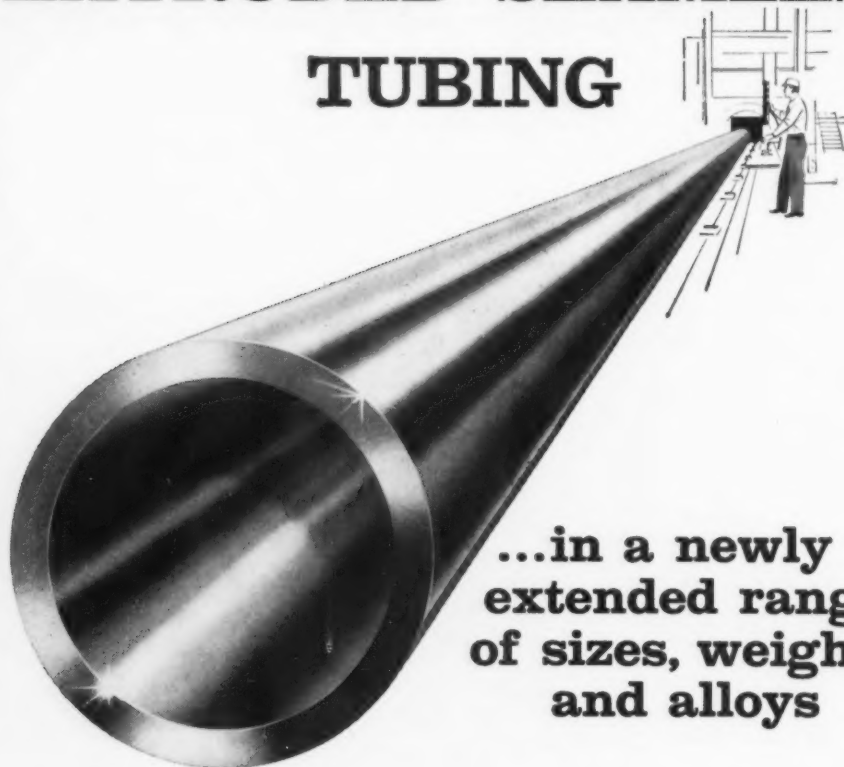
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Curtiss-Wright EXTRUDED SEAMLESS TUBING



**...in a newly
extended range
of sizes, weights
and alloys**

The recognized advantages of Curmet extruded steel tubing...*high transverse strength, uniform physical properties, longer lengths* . . . are now available for the first time to a wide range of industrial applications.

Technological advances at Curtiss-Wright's Metals Processing Division have now made possible:

- Sizes from 8 through 20 inch outside diameters, and even larger, in quarter inch increments.
- Materials include premium carbon steels, alloy steels, stainless steels and high temperature materials.
- Wall thicknesses from A.S.A. Schedule 20 through Schedule 160, and larger sizes through 4 inches.

New latitude in fabrication and closer matching of dimensional needs enable you to use this high-integrity tubing in an expanded range of pressure, temperature and mechanical applications . . . with new economy.

FOR FULL INFORMATION, WRITE TO:

METALS PROCESSING DIVISION
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CURTISS-WRIGHT CORPORATION
Buffalo 15, New York



COMPUTER PROGRESS

Digital and Analog Computers at Work

ARTICLE 3 VOLUME 1

SOLVING A TINPLATE INSPECTION AND BILLING PROBLEM WITH MODULAR COMPONENTS

The trend towards purchasing tinplate direct in large coils rather than in sheets brings about a change in inspection techniques. No longer is it possible to separately inspect each sheet; instead, inspection must now be done at line speed on the delivery end of the tinning line. As complete coils of tinplate will now be shipped to the customer, steel companies will need permanent, accurate defect records.

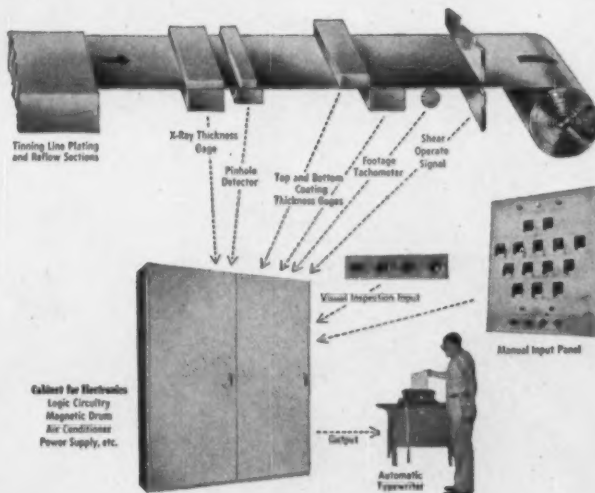
General Electric is now solving this problem for several tinplate producers by automating their data logging with the new Model 302 Automatic Inspection Data Accumulator for Tinplate. This system provides a complete, typewritten record for quality control and billing purposes immediately upon completion of each coil.

Unlike many computers installed in factories, the G-E Data Accumulator is designed specifically for an industrial environment, not for office use. Modular electronic units are mounted on strong, 3/16 inch metal frames in completely enclosed cabinets. The all-transistorized plastic coated printed circuit plug-in cards are easy to repair; maintenance costs are reduced since cards may be re-

used, and spare parts stock is kept small.

In addition, an exclusive new magnetic drum application cuts out approximately 60% of previously required electronic gear. Not only does the reduction in complexity increase reliability, but the space and dollar saving also allows sufficient

duplication of circuitry for constant cross-comparison of data. Preventive maintenance can be performed on one section while the other continues to log data. Magnetic storage also eliminates the danger of losing stored data if power fails.

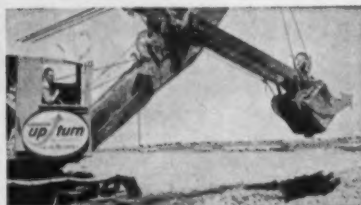


ONLY 8 HOURS INSTRUCTION REQUIRED TO OPERATE PRODUCTION SCHEDULING COMPUTER

The new G-E 306 desk-size analog computer, designed to solve office and factory production and business problems, can be operated by the average clerical worker after only 8 hours instruction.

The computer is used wherever multiplication of a number by each of fifty coefficients and the summing of the results is required. Up to twenty-four such numbers may be multiplied with one setting of dials. Manufacturing

COMPUTER DEPARTMENT LAUNCHES OPERATION UPTURN WITH NEW MILLION-DOLLAR PLANT IN PHOENIX, ARIZONA



problems such as production scheduling, materials explosion and work station load impact studies, as well as business problems like budget syntheses and operating reports (or any other first order linear equation problem) may be solved.

A typical solution takes only 2 minutes. The unit operates on 115 volts.

General Manager H. R. Oldfield, Jr., is pictured at the controls of the Operation Upturn steam shovel which recently broke ground for the new 104,000 square foot permanent plant which is expected to be completed by December of 1958.

"Our business is good and getting better," Oldfield said. "We're going to continue to expand during the year, adding perhaps a hundred or more people." The department now has over 800 employees.

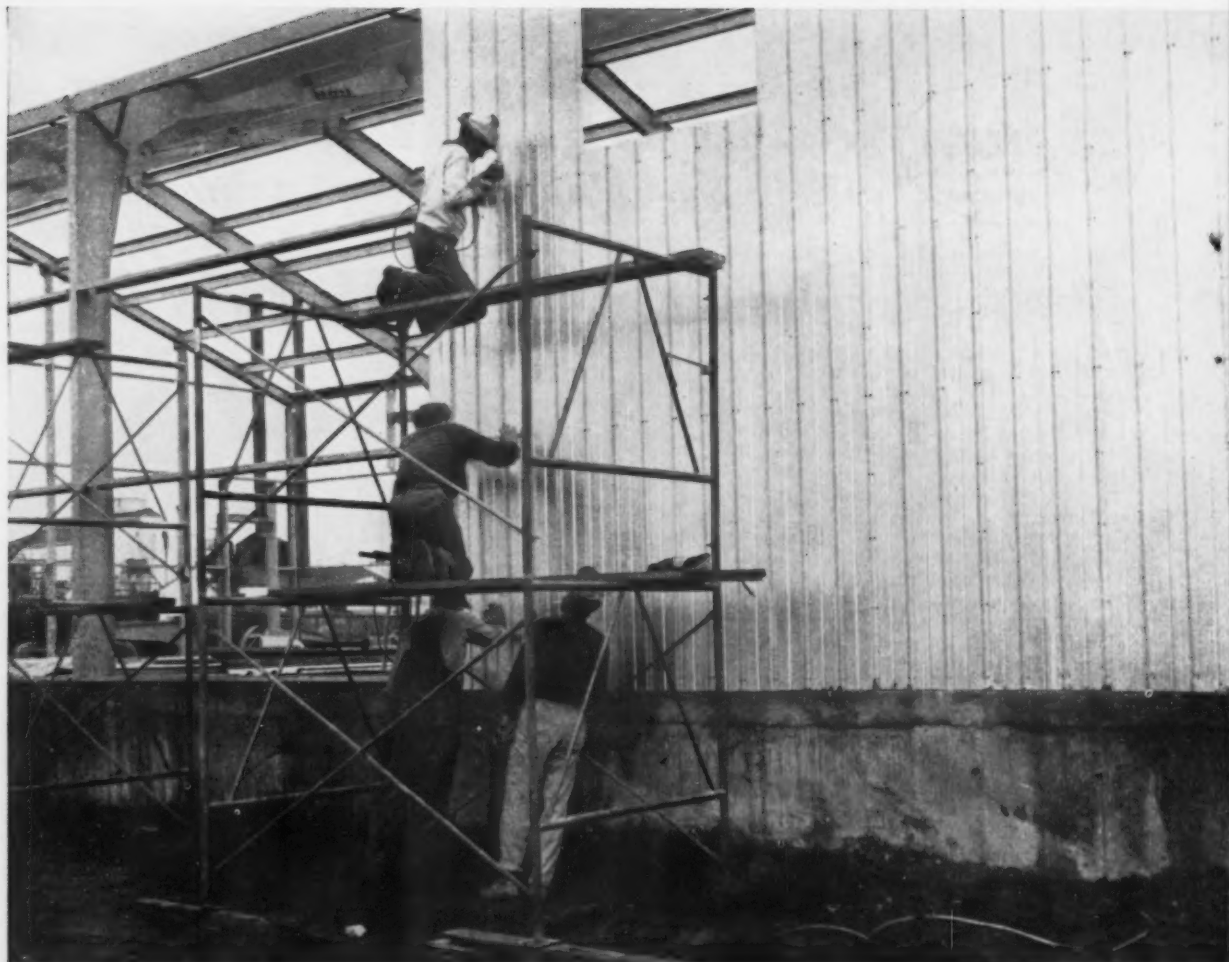
The 160 acre site is located in Deer Valley Park, northwest of Phoenix along the west side of the Black Canyon Highway and south of the intersection with Thunderbird Road.

For more information, contact your nearest General Electric Apparatus Sales Office, or Computer Department—Room 102, General Electric Company, 1103 No. Central Avenue, Phoenix, Ariz.

CPA-3

Progress Is Our Most Important Product.

GENERAL ELECTRIC



3 WEEK DELIVERY

TRUSCON "Budget-Buildings"

Truscon Steel "Budget Buildings" are the fast, economical way to provide warehousing, enlarge manufacturing facilities, erect field offices at lowest cost. Available with 3-week delivery from order to job site!

Basic framework is of rigid frame design, shop fabricated from hot rolled structural sections, complete with all necessary connection plates and anchor bolts. Purlins and girts are cold formed channel sections, bolted with standard machine bolts.

Roofing and siding are 26-gage galvanized roll formed ribbed sheets 24" wide, and in continuous lengths.

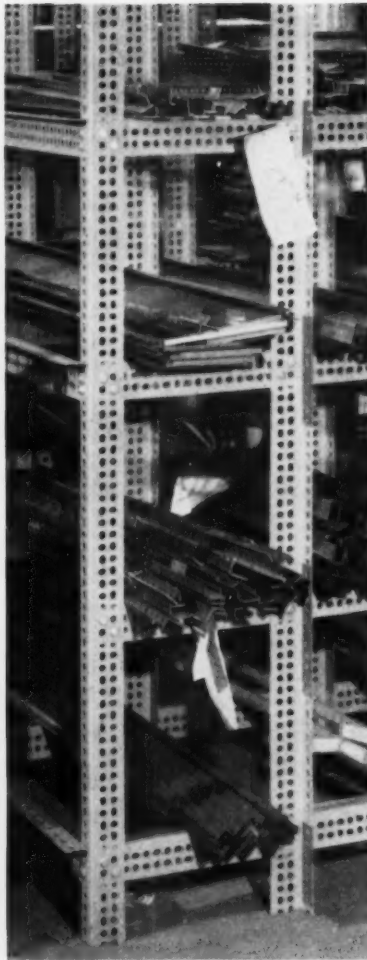
Sheets are rolled from Republic tight-coated, continuous hot dip galvanized steel . . . will not flake, crack, or peel. More rust resistant than ever and no painting needed.

Truscon "Budget Buildings" are available in widths of 32, 36, 40, 44, and 48 feet—12- and 14-foot heights, in any lengths necessary. All roofing, siding, windows, doors, and hardware are shipped to the job site as a package.

To learn more, call your Truscon representative, or write for attractive, full-color brochure.



REPUBLIC COIL COVERS provide excellent weather protection, shut out dirt, stop vandalism, eliminate costly replacement of short-lived tarpaulins, eliminate the need for paper wrappings on coils. These coil and car covers are 22 feet long, 6 feet wide, and 6 feet high. Two covers are used with each 52-foot gondola car, easily handled by overhead or trackside crane. Designed for stacking. Send coupon for more shipping protection facts.



REPUBLIC METAL LUMBER® saves time, space, and money! Precision engineered system of short slots placed to allow $\frac{3}{4}$ " vertical and horizontal adjustment, offers unlimited applications. Simply measure, cut, assemble. Bonderized to resist rust and damage; baked enamel finish. Delivered in bundles of 10 angles, .080 gage or .104 gage, 10- or 12-foot lengths, bolts and nuts included. Stores in space of one 2" x 4" piece of lumber. Send coupon for idea-packed catalog.



REPUBLIC STEEL LOCKERS offer clean, attractive, dress-wash-change facilities. Interiors are spacious, well designed for convenience and ventilation. All furnaces are Bonderized to resist rust, retard corrosion, and provide better paint adhesion. Finish is baked enamel. Positive locking, heavy-duty steel construction assure protection of personal effects and tools. Call your nearest Republic representative, or send coupon for data, prices, and delivery.

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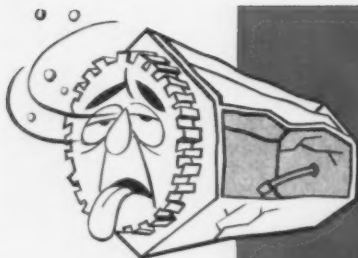
- ☐ Truscon Steel "Budget Buildings"
- ☐ Republic Coil-Car Covers
- ☐ Republic METAL LUMBER
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Have UDYLITE repair, replace plating barrels NOW...at low cost!

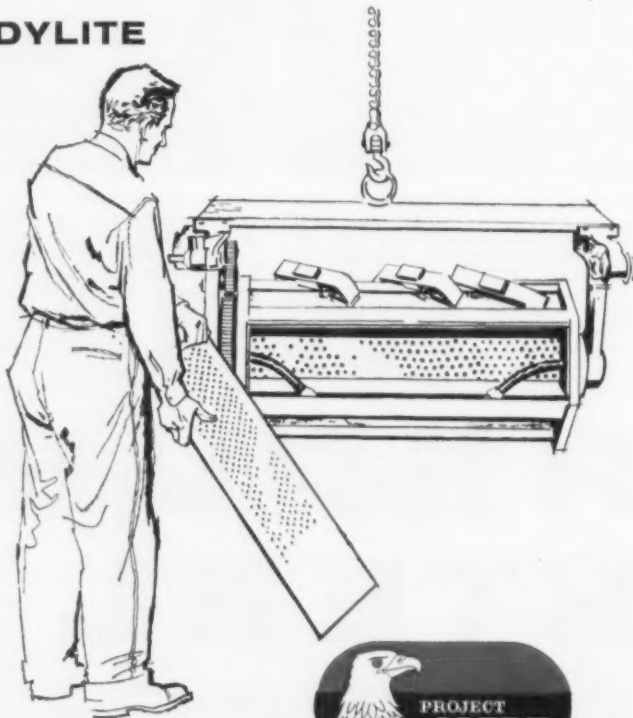
Get ready today for tomorrow's upswing in business! Have your plating facilities geared to peak performance . . . avoid the risk of costly down time during peak periods of production. Take inventory of your equipment needs . . . and the condition of your plating barrel equipment. Then let your

Udylite sales engineer give you on-the-job quotations for repairs or replacements. When your equipment is sent to Udylite . . . you are guaranteed a definite return delivery date. A special department handles your order all the way through . . . costly down time is kept to an absolute minimum.

REPAIRS OR REPLACEMENTS BY UDYLITE OFFER THESE ADVANTAGES:

- 1** IMMEDIATE QUOTATIONS given by Udylite salesman right in your shop!
- 2** ALL REPAIRS or REPLACEMENTS WITH GENUINE UDYLITE PARTS! You're assured of finest Udylite engineering, highest quality!
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- 4** FAST, GUARANTEED DELIVERY of equipment sent to Udylite. Special department set up to expedite your order.

Let Udylite help you get your entire plating operation in top working order, ready to go at top capacity. Your Udylite sales engineer will soon be calling on you. But if you need priority service write, phone or wire directly to:



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RIVETLESS CHAIN

for general conveying systems,
overhead trolleys, scrapers

CHAIN STRENGTH is achieved from heat-treating quality steel; addition of bulk weight only increases power requirements. Jeffrey drop forged, heat-treated Rivetless Chain ranges to a maximum ultimate strength of 130,000 lbs. The weight — 9 lbs. per foot.

Within very broad limits, Jeffrey Rivetless Chain will operate over irregular courses in either vertical or horizontal directions.

Links and pins can be reversed when excessive wear is evident, thereby increasing chain life while greatly decreasing maintenance costs. Simplicity of design makes single link or section replacements fast and easy.

Jeffrey Rivetless Chain is detachable. Assembly is aided by the cutout portion of center link which allows the side bars to be brought together for ease of insertion or removal of the pin.

Whether replacing links or specifying a complete conveyor system, the Jeffrey district office or distributor in your area can make the job initially less expensive — ultimately more profitable.

Write for Catalog #899. The Jeffrey Manufacturing Company, 925 North Fourth Street, Columbus 16, Ohio.



Jeffrey Scraper Conveyor with two strands of rivetless chain



STRONG...
without needless bulk weight

DETACHABLE...
for fast, easy assembly —
lower maintenance costs

*Available in alloy
heat-treated steel*

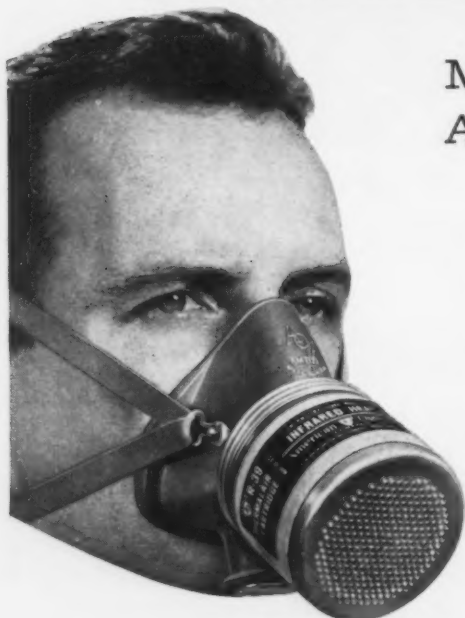
ADAPTABLE...
to irregular courses,
vertical or horizontal
conveyors



JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT...TRANSMISSION MACHINERY...CONTRACT MANUFACTURING

NEW...AO Introduces "THERMALAIR"*



More than a NEW Respirator —
A New IDEA in Respirators!

For Protection Against Excessive Heat meet the R-2039 Thermalair Respirator — newest in the line. It's equipped with a new R-39 heat exchanger cartridge to permit work in atmospheres considered too hot for endurance beyond a few seconds! Worker breathes in and heat is stored in the cartridge. Worker breathes out and the heat is removed from the cartridge. Reduces temperature of inhaled air to approximately 100°F. The Thermalair has already proved its capabilities on the job in many plants by reducing costly shut-down time for kilns and its performance in other hot atmospheres up to 300°F.

AO ALUMINIZED ASBESTOS CLOTHING — for those Extra Hot Operations

These garments reflect 90% of radiant heat — weigh 50% less than regular asbestos — lower worker fatigue — increase efficiency.

7X243 Boots. Insulated against heat with aluminized asbestos as outside cover, fiber glass batting and flame resistant, duck inner lining. Oak tanned leather sole with fiber glass insulation, plus Silvabestos inner sole.

205RA Pants. All seams double stitched for extra strength. Snap fasteners at front opening. Leather belt loops. Duck lined waist band. Trousers 24" at bottom. Standard leg length 32" inseam. Standard waist sizes 30" to 52" in graduations of 2". (Allow 2" over regular waist measurements.)

204RA Coat. Complete protection for upper body. Wool collar protects neck. Snap fastener adjustment on cuffs assures snug fit. All snap fasteners on front have leather pull tabs for quick removal. All seams double

stitched. Coats available in following standard lengths:

Cat. No.	Length
204RA-30	30"
204RA-36	36"
204RA-40	40"
204RA-44	44"
204RA-48	48"
204RA-50	50"

75RA Respirator Hood. Has aluminized window and accommodates new Thermalair Respirator for protecting head, eyes, face and lungs against excessive heat. Aluminized asbestos.

5X357 Heat Glove. Fully lined with leather palm for handling hot objects and aluminized asbestos back for reflecting heat.

Information on any of the above items will be gladly sent at your request.

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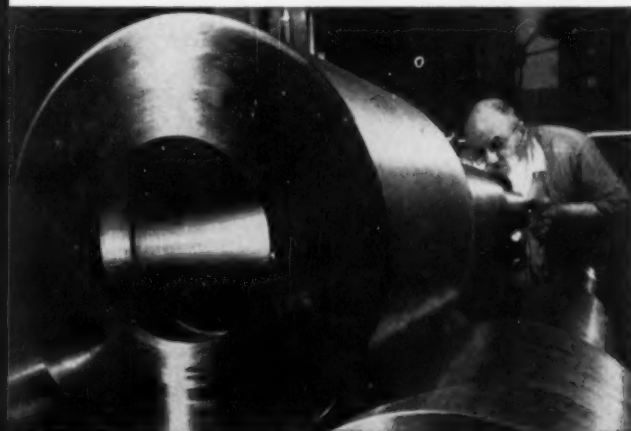
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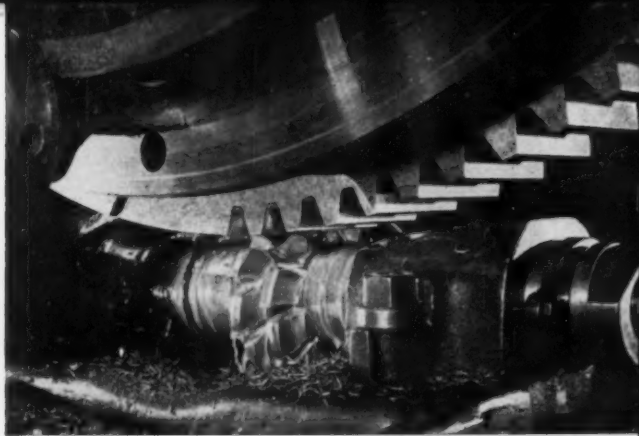
ALCO FORGINGS



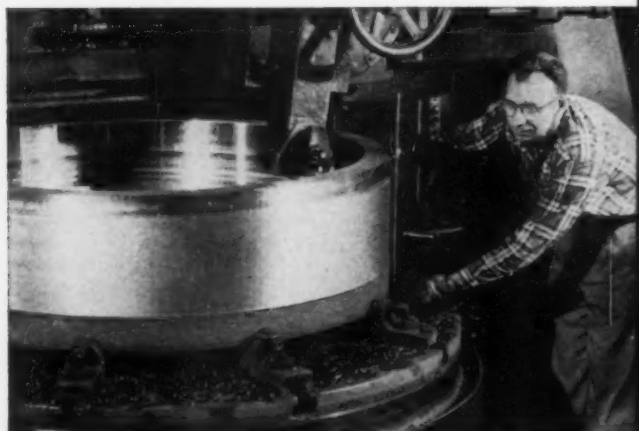
SAVES \$150 PER GEAR—In cutting a double-web design fabricated gear on a gear generator, tool cost formerly averaged \$180 per gear. By switching to ALCO Hi-Qua-Led Steel with its lower friction component, tool wear is reduced, and manufacturer reports savings of approximately \$150 per gear.



700% INCREASE IN TOOL LIFE—In trepanning a 4 in. diameter hole 42½ in. long with a Warner & Swasey lathe, tool life averaged one piece per tool. With Hi-Qua-Led, 8 pieces are now obtained with the same tool. Manufacturer reports that Hi-Qua-Led Steel also provides much better chip formation.



8-HOUR JOB DONE IN 3—Another manufacturer reports that roughing and finishing a gear required a total of 8 hours and 8 minutes on his gear cutter. With free-machining Hi-Qua-Led Steel and the increased speeds and feeds it permits, the job is now completed in just 3 hours and 10 minutes.



TOOL DOES 3 TIMES THE WORK—With Hi-Qua-Led Steel, a King boring mill operation that once required 3.4 hours is off the machine in 43 minutes. Through the lower frictional properties of Hi-Qua-Led Steel, the manufacturer obtains 10 pieces per tool grind as compared to 3 pieces obtainable with non-leaded steel.

HOW ALCO'S EASY-MACHINING HI-QUA-LED STEEL* FORGINGS CAN CUT YOUR PRODUCTION COSTS

The easy machinability of ALCO's Hi-Qua-Led Steel® forgings is setting new production records throughout industry. In case after case, a switch to Hi-Qua-Led Steel forgings has resulted in greatly reduced machine time, longer tool life and improved surface finish with closer tolerances.

These unique cost-cutting benefits are provided by Hi-Qua-Led Steel forgings with all the other physical characteristics of regular steel in the same AISI grade. You get the same service in your end product.

ALCO specialists will be happy to demonstrate these

profit-boosting characteristics on your own machines, in your own plant. Forgings are available in seamless rolled circular shapes from 18 to 145 in. OD, in open-die shapes from 1,000 to 30,000 lb and 40 ft long, and in mandrelled seamless circular shapes up to 60 in. wide.

For a technical booklet on Hi-Qua-Led Steel forgings, write ALCO Products, Inc., Dept. 155, Schenectady 5, N. Y.

***HI-QUA-LED STEEL**—ALCO's registered trademark for its special process leaded steel forgings that are making outstanding reductions in machining time, tool wear and production costs

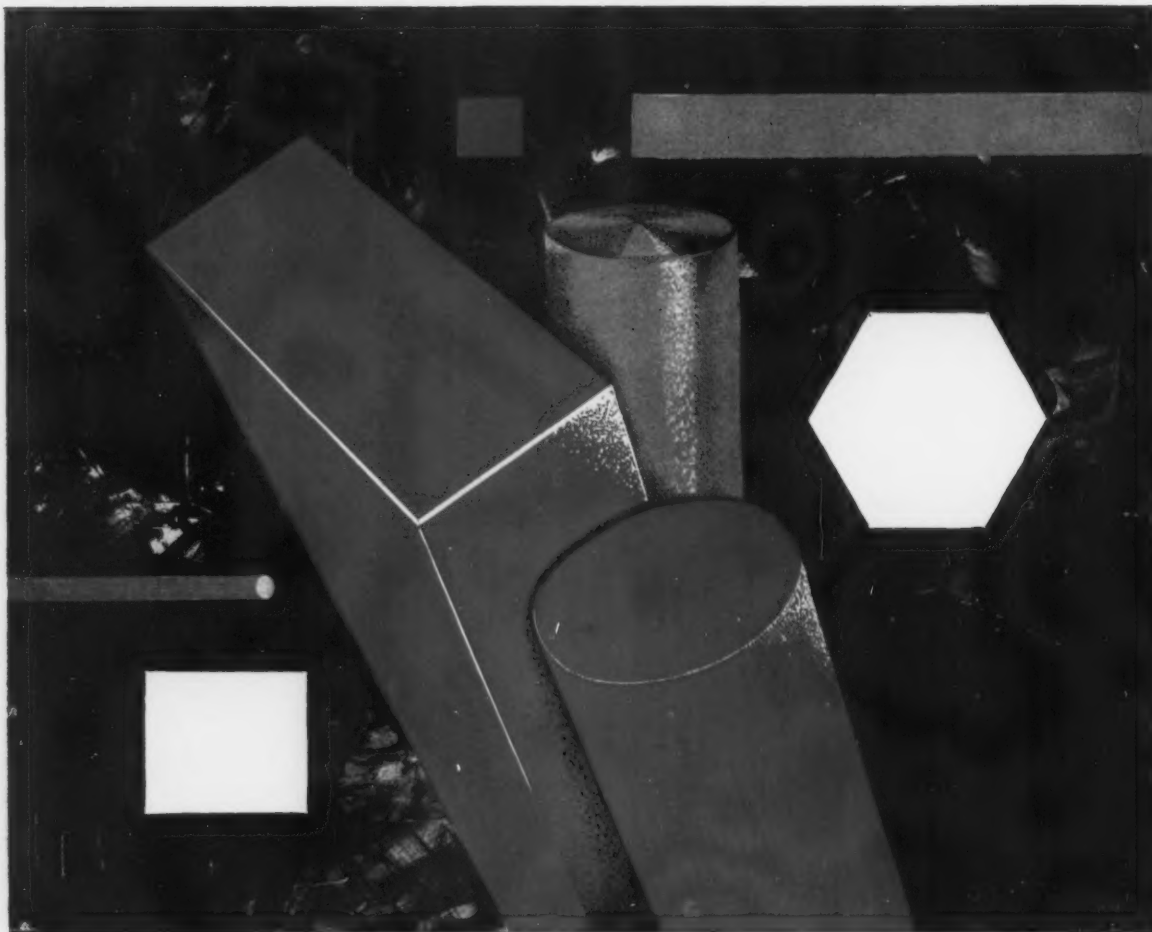
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Use quality Carilloy Steels ...available at your steel service center

The wide distribution of **USS Carilloy Steels** is your guarantee of instant availability. So, you can be certain of prompt, efficient delivery when you order **USS Alloy Steels** from a steel service center.

Plan now to combine the production-boosting benefits of a steel service center with a full line of quality-controlled products from United States Steel. For instance, you can get these **USS Carilloy Steel** products at your nearby steel service center: blooms, billets, slabs, bars, bar shapes, spring flats, plates, sheets, strip, special sections, structural shapes . . . any form, specification, condition or quality you need.

Remember, as a part of the American Steel Warehouse Association, your steel service center has been set up specifically to handle your immediate steel demands. So the next time you order alloy steel from your steel service center, be sure to specify **USS Carilloy Steels**.

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STUCK DIES

... quickly, easily
released with
exclusive
patented
**LODGE & SHIPLEY
WEDGE TYPE
RAM PRESSURE
RELEASE**



THIS . . .



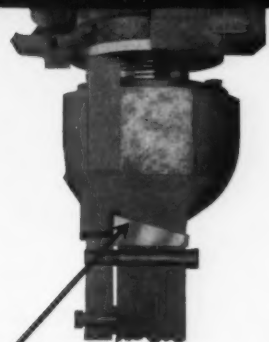
NOT THIS!

- Use wrench not a cutting torch
- in minutes instead of hours
- without damage . . . die holder destroyed

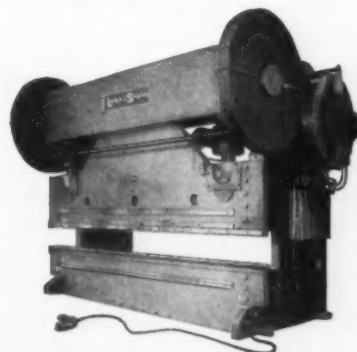
When a press brake is stalled due to improperly adjusted dies . . . do you face a short delay or near disaster?

With a Lodge & Shipley Press Brake, release of the stuck dies is a quick, simple, non-destructive matter as described in the accompanying detail.

This is but one of many outstanding Lodge & Shipley Press Brake features designed for fast, accurate, efficient and dependable press brake operation. New literature gives complete details. Write: **The Lodge & Shipley Co., 3073 Colerain Ave., Cincinnati 25, Ohio.**



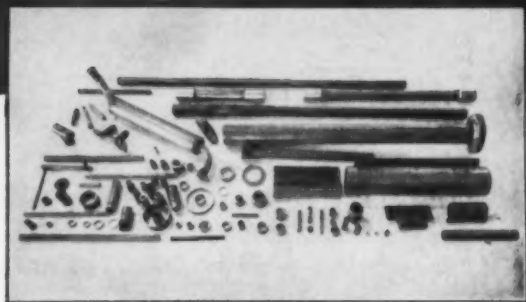
The Lodge & Shipley Wedge Type Ram Pressure Release is unusually simple and rugged in design. A heavy steel wedge has a top angle that complements a similar angle on the base of the ram pitman socket housing. Held securely by a heavy steel plate, the wedges can be released quickly to provide up to 1/4" additional clearance.



Lodge & Shipley . . . your Lodge-ical choice



Seven-million miles of street and industrial sweeping in 700 cities have proved rugged dependability of Wayne Manufacturing Company's equipment. Here is the final assembly line in its plant. Large horizontal tube on sweeper is jack shaft housing for gutter broom drive. Wayne makes 300 parts from Pittsburgh Steel's Seamless cold-drawn tubing (see inset at right). That's how ...



Pittsburgh Steel Seamless Tubes Help Wayne Make Clean Sweep

Nobody knows how many brooms it would take to keep the world clean. But out in Pomona, California, Wayne Manufacturing Company is ready to tackle the job with a complete line of power sweepers.

Founded only ten years ago, the Wayne Company has grown rapidly until today it produces more street and industrial power sweepers than all others in the field combined. Wayne is the only power sweeper produced by assembly-line operation.

Largest Wayne sweepers handle up to four cubic yards of debris at a time. Their assembly requires more than 1,000 complicated and accurately manufactured steel parts.

• **300 Key Parts**—Of these, more than 300 key items are fabricated from Pittsburgh Steel Company's Seamless Tubing in both carbon and alloy grades in sizes ranging from one-quarter inch to six inches in diameter. It is furnished cut to length and ready for fabrication by Baker Steel & Tube

Company of Los Angeles, a Pittsburgh Steel distributor.

This service helps speed Wayne production, keeps inventories down and is typical of service rendered by all Pittsburgh distributors.

"Requirements for the parts produced from Pittsburgh tubing are exacting," says Wayne production vice-president, Roy E. Nelson. "Our sweepers are doing big jobs, many of them operating on a 24-hour schedule, and we

must have a tough, dependable product in the critical spots to take this constant heavy beating."

That is why Wayne uses Pittsburgh Seamless Tubing in critical components such as rugged axle assemblies, torque housings, drive shafts, hydraulic actuating cylinders—even small fittings.

Over the years, Wayne production men have found Pittsburgh tubing has the surface finish, close size tolerance and concentricity which minimize the amount of machining that must be done. Its uniformly high physical properties and internal soundness provide the stamina necessary for long, trouble-free service.

• **Ease of Fabrication**—The machinability and weldability of Pittsburgh tubing make for ease of fabrication, keep scrap losses down, and assure uniform parts—all important factors in keeping production lines moving smoothly.

As an aid to industrial good house-keeping, Wayne produces smaller power sweepers for use inside and outside plants. Its newest line is the Autoette series which includes the glamorous "Golfmobile" and the family "Cruise About." Three industrial models provide efficient transport of personnel and materials in sprawling plants.

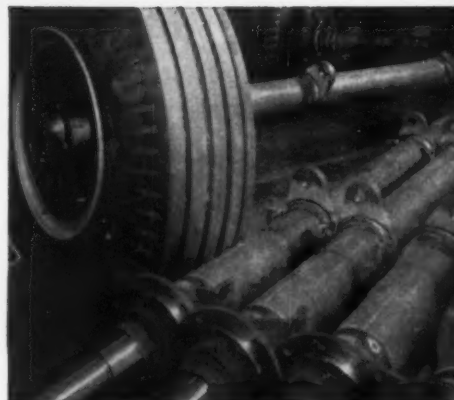
These industrial sweepers and Autoettes also depend upon Pittsburgh Steel tubing for parts in key assemblies.

Manufacturers find the uniformly high quality of Pittsburgh cold-drawn steel seamless tubing and excellent service from Pittsburgh distributors are big assets in improving products and operating efficiency. To enjoy these benefits get in touch with the representative nearest you.

Pittsburgh tubes withstand torque and fatigue in main and auxiliary drives on Wayne sweepers.



Machinability and weldability of Pittsburgh tubes are vital in making this shaft which goes into differential assembly. Short tube is welded over longer, smaller diameter tube, then machined to tolerance of .001 inch to assure perfect fit in housing.



Rugged front axle assembly of Wayne sweeper made from Pittsburgh tubes carries most of weight of machine and up to four cubic yards of debris. It must withstand road shocks and constant heavy-duty operation.

Pittsburgh Seamless Distributors

Baker Steel & Tube Company
Los Angeles, California
Chicago Tube & Iron Company
Chicago, Illinois
Cleveland Tool & Supply Co.
Cleveland, Ohio
Drummond McCall & Co., Ltd.
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Philadelphia, Pennsylvania
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San Francisco, California

Earle M. Jorgensen Co.
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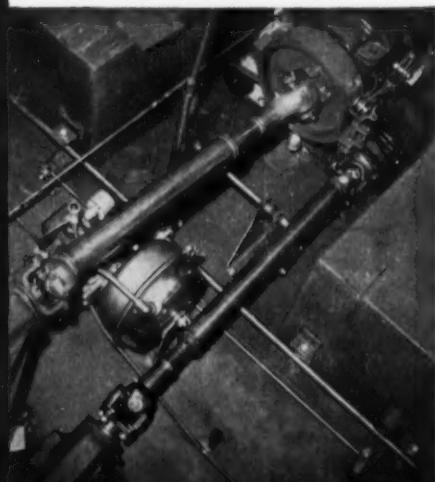
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HERRINGBONE WIRE ROPE

New
Longer-Wearing
Pattern in
Wire Rope
Styles!

After three years of extensive field trials this, the newest of Roebling's wire ropes, is now ready to go to work for you on a service basis that will exceed that of *the wire rope you are now using*.

Roebling Herringbone* combines the best features of both regular and Lang lay rope constructions; being made up of two pairs of Lang lay strands and two strands of regular lay. The regular lay strands separate the two pairs of Lang lay strands. Thus, in one rope you have the superior flexibility and abrasion resistance of Lang lay and the greater structural stability of regular lay.

For the past three years, under all kinds of conditions, Herringbone has been used for general hoisting, holding and closing lines, shovel ropes, wagon scraper ropes and dragline ropes. The results have been wonderful . . . excellent flexibility, exceptional resistance to shock and abrasion, smooth, easy operation around drums and over sheaves, smooth spooling properties and structural stability unequalled by other rope for the same job.

There has never been a better time—or a wider need—for a wire rope that returns so much service for its cost. And, in addition to being a top performer on the job, Herringbone eliminates the necessity of stocking Lang lay for one purpose and regular lay for another.

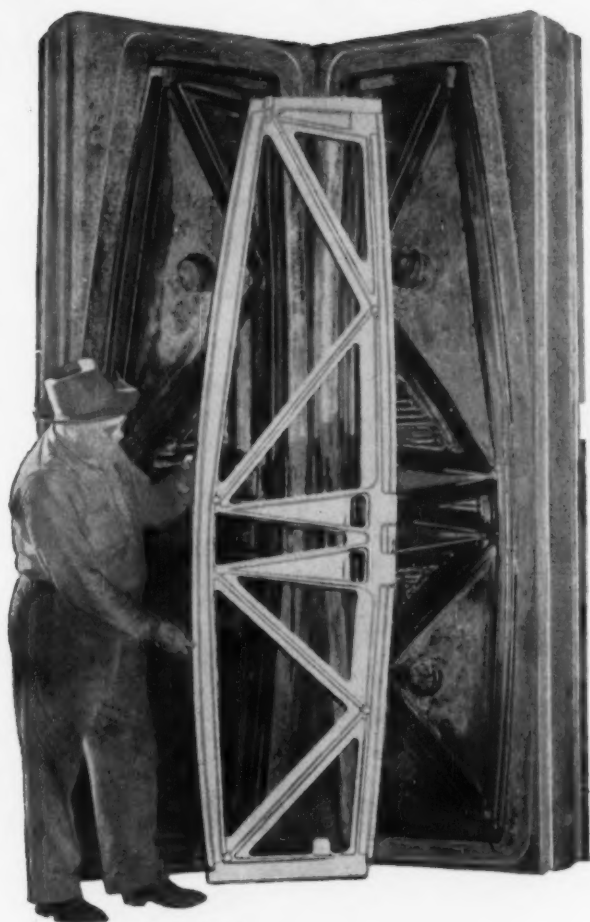
You are invited to get in touch with your Roebling distributor or write Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, for further and fuller details on the *investment* qualities of this new and highly serviceable rope.

*Reg. appl. for

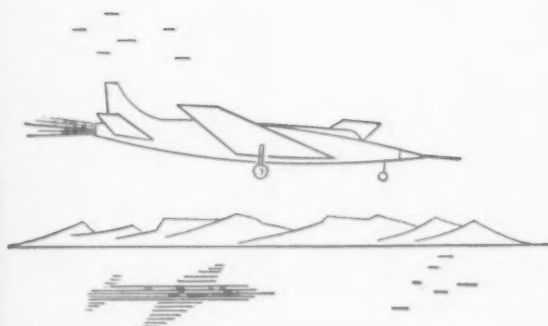
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DIE BLOCKS**

...the aircraft industry does!

These two 14 x 35 x 114" FX die blocks, made from Finkl electric furnace steel, and weighing 15,800 pounds each, are used for producing precision aluminum landing gear rib forgings.

Finkl FX die blocks are noted for their long production runs and economy because:

- FX covers the full usable hardness range from Temper H (477-444 BHN) to Temper 4 (293-269 BHN).
 - FX produces the greatest number of forgings per impression because its well balanced alloy content offers uniform hardness and freedom from temper brittleness. Relatively high tempering temperature promotes ductility and elimination of residual stresses.
 - FX Special Machining Quality appreciably reduces shanking and sinking time. These proved advantages can also mean savings to you with more pieces per die and better deliveries to your customers.
- Save money by talking to a Finkl representative the next time you are considering die blocks or forgings.



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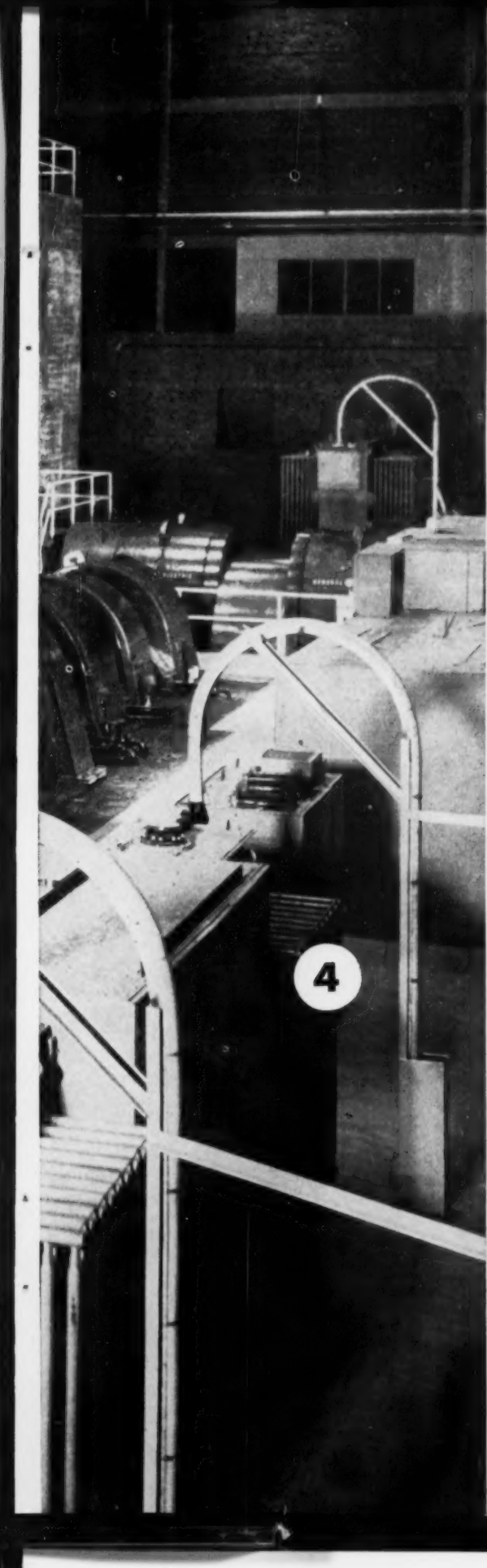
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2

3

Slabbing mill's co-ordinated electrical system power package: ① results in lower costs when drive motors are mounted **"TOP-FORWARD"** ② affords accurate mill operation from main-drive d-c control equipment and from auxiliary M-G sets, ③ provides dependable d-c power for drive motors from flywheel motor-generator set, ④ gives high efficiency power supply from G-E unit substation.

GENERAL  ELECTRIC



New General Electric
Drive System . . .

Lowers Installation, Maintenance Costs

A new General Electric DC Drive System for reversing mills incorporates unique features designed to save considerable installation and yearly maintenance expense. With the G-E design, large twin drive motors become easily accessible—this means less maintenance expense. And, with ventilating equipment "built-in", foundation and other installation costs are reduced. Modernization of obsolete mills becomes more economical than ever before.

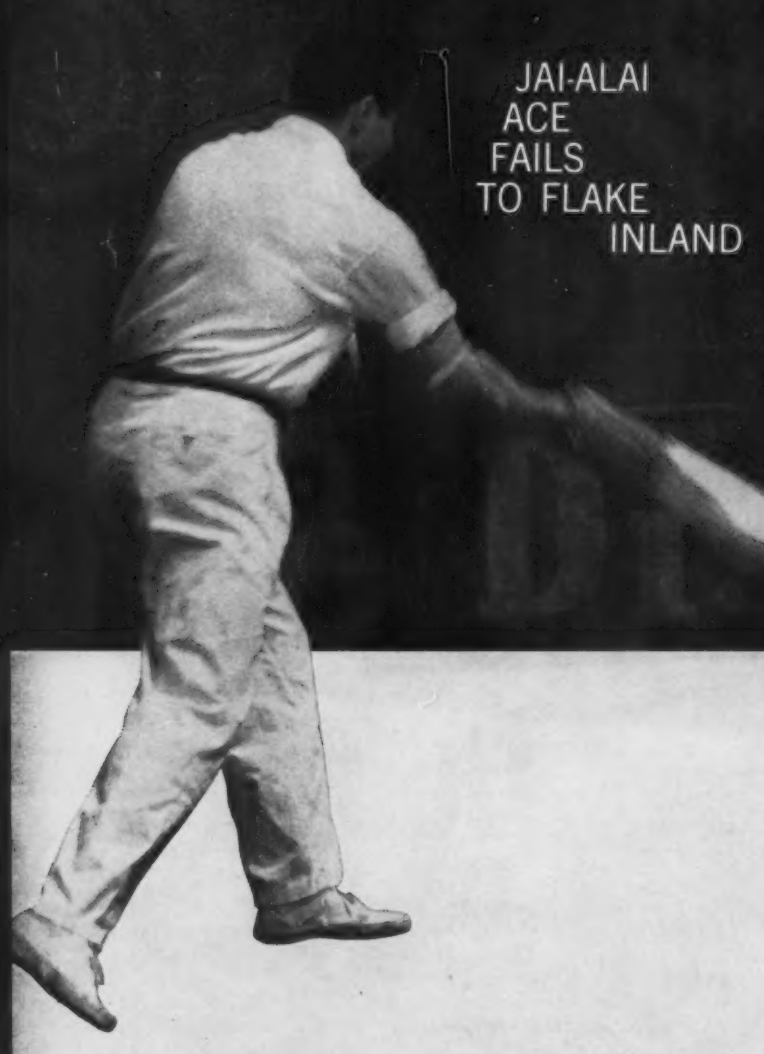
Now in operation at an Eastern mill, the new drive system resulted from an extensive G-E engineering study into previous construction and maintenance procedures. The new **"TOP-FORWARD"** arrangement, for example, places the top motor nearest the mill, with the rear motor shaft passing under the forward motor. Result: servicing time is reduced. Design of quick-removable motor covers permits faster servicing, with a minimum of effort.

These revolutionary **"TOP-FORWARD"** mill motors with extra value features available now, combine with other electrical system components to give one of the fastest and most accurate drive systems now available to the metal rolling industry.

G.E. is ready to work with you to provide the most advanced quality-engineered electrical equipment for your mill applications. Your nearest General Electric Apparatus Sales Office will give you complete information. Write for GEA-6812, DC Drives for Metal Rolling to General Electric Company, Schenectady 5, N. Y. 699-122

Engineered Electrical Systems for Steel Mills

GENERAL  ELECTRIC



JAI-ALAI
ACE
FAILS
TO FLAKE
INLAND

TI-CO

FABRICATION WON'T FLAKE TI-CO EITHER

A jai-alai ball travels at speeds over 100 m.p.h.—hits with terrific impact. From a distance of only 60 feet, one of Mexico's leading jai-alai players, Jose Fuerto, slammed the ball into a TI-CO Galvanized Sheet again and again—severely pounding it—but there wasn't a sign of flaking!

In your manufacturing operations, TI-CO can be deep drawn, stamped, bent, crimped, lock-seamed, even spin-drawn, without flaking or peeling. In fact, any product that can be made from cold rolled steel can be made from TI-CO, giving your product dependable protection against corrosion and an eye-appealing finish that can mean stepped-up saleability.

If you are designing or manufacturing a metal product that requires rugged strength plus corrosion resistance, you'll find TI-CO Galvanized Sheets the practical and economical solution. Coils or cut lengths up to 60" widths; gages 8 to 30 inclusive. Consult your local steel distributor or Inland representative. Write today for a free, informative booklet on TI-CO.



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More for Brass Mill Extras

Brass mill extras will go up in the near future, according to one purchasing man. He reasons this way: Brass mills must find a way to recover some of the increased costs resulting from wage increases. Since international competition controls the price of copper, mills will have to seek relief in the form of increased differentials over the price of refined copper.

Diffuser Silences Air Tools

Mounted on an air tool's exhaust port, a highly porous filter breaks up the force of escaping air. Controlled porosity keeps back-pressure to a minimum. The metal-powder diffuser slows the air stream so gently and noiselessly, there isn't enough force left to blow out a match several inches away.

Rimmed Steel: Uses Grow

At least one major auto company is in the process of widening the use of rimming grade steels. With the development of the non-aging product, automakers expect to get improved surfaces with freedom from strain aging now associated with aluminum killed steel.

Low Temperature Processes

Watch for new emphasis on low-temperature, high-pressure equipment. The chemical industry is intrigued by the new processes this equipment might make possible. Under development are processes designed to run at temperatures of -400°F . A big job for the near future is compiling data to convince management that such equipment will be worthwhile developing and installing.

Study Vehicular Power

Nuclear, steam, and solar power are being researched around the clock for their possibilities as vehicular power, says one authority. While the gas turbine shows promise in power range beyond diesel, he believes the steam engine would probably be the best atomic-power converter

when nuclear fuels for vehicles become feasible. Availability of energy from solar radiation would also make steam-engine power more practical than at present.

Check Missile Progress

Ballistic missile programs may soon give the U. S. clear superiority over the Russians, top missile-men believe. Even now, actual U. S. production of intercontinental ballistic missiles is probably greater than Russia's, these sources state. They add that the Air Force is on the verge of success in its Atlas program to give this country the edge.

Final Steps to Be Toughest?

Nearing completion of its million-hp power plant, Aluminium Ltd. finds the final step may be the toughest. It appears that a slight miscalculation in blowing the rock plug holding back the water could weaken the dam upstream. The company is having a number of explosives experts survey the situation. Several test blasts are planned before zero hour in Spring.

Natural Gas Atomizes Fuel

A change from atomizing open hearth fuel oil with steam to atomization with high-pressure natural gas has resulted in higher flame temperature and fuel savings. The flame is shorter, brighter, less dense and 3-pct hotter than the steam atomized flame. The high-pressure gas system requires changes in piping, flow controls and reversal system.

Warning to Defense Firms

Aggressive spy work, not engineering ability, has thrust Russia ahead, one military specialist says. He claims the great gains in Red technology in recent years are due chiefly to industrial secrets stolen in the U. S. over a period of years. His warning: Firms holding government contracts must get tough about plant visitors and check deeper into after-hours doings of their employees.

Farval provides dependable lubrication for National Tube's tempering furnace

AT U. S. Steel Corporation's National Tube Division this Surface Combustion High Yield Furnace—used in their Warm Working Process—heats pipe to 900-1000° before it enters the sizing mill. To provide steady, reliable lubrication to the 32 brass drive bearings, a Farval Manual Dualine lubrication system was selected.

This installation is another example of how standard Farval systems continually solve lubrication problems of all types of metalworking machines. Giving the greatest operation flexibility under the widest range of physical requirements, a Farval system lets you pick the best lubricant for your requirements.

You can solve your lubrication problems by asking for Bulletin 26-S. Write The Farval Corporation, 3282 East 80th Street, Cleveland 4, Ohio.



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—wherever you see the sign of Farval
—familiar valve manifolds, dual
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Hope Fades for Labor Reform Laws Next Year

After a year of legislative frustration, the Administration will try again in 1959.

Few persons in the Capital think labor reform measures have a chance. — By R. O. Schulin.

■ The Eisenhower Administration will go before the 86th Congress next year and request essentially the same labor reform legislation it asked for but didn't get this year from the 85th Congress.

The Labor Dept.'s primary concern is still the need for laws to root the hoodlum element out of unions. The Administration will restate its case for laws controlling organized picketing, the secondary boycott, health, welfare, and pension plans, and union finances.

Furthermore, the Administration will urge that the Labor Dept. be given power to investigate and prosecute violators.

The Prospects — But what the Administration gets will probably

fall far short of what it wants.

Barring an unforeseen turn of events in the approaching elections—or a sensational scandal in the labor family between now and next summer—the Administration's requests will find fewer sympathetic ears in the 86th Congress than at any time in the past six years, say Washington observers.

Wider Democrat Margin—Both political parties foresee the Democrats gaining as many as 20 seats in the House of Representatives in

Labor Reform: A Matter of Opinion



Labor Secretary Mitchell:

"The people of this country are going to demand of their Congressmen and Senators in this election some assurance that they will come back into Congress and give the country effective labor-management legislation."



C of C President McDonnell:

"The first order of business in the next session of Congress should be the passage of labor reform legislation with enough teeth in it to run the racketeers out of the labor movement."



Labor's Al Hayes:

"Organized labor has gone farther than any other private institution in our nation to establish and to police standards of ethical behavior on the part of its members."

November. In the Senate they may gain six. It would increase the Democratic majority to 55 in the House and eight in the Senate.

When the labor reform issue comes up next session, it can be assumed that labor-supported Democrats will take into account labor's opposition to government intervention in its internal affairs.

Few Results—In the past session of Congress the Administration presented what it called "the first

comprehensive legislative program to compel trust in the administration of American labor organizations and labor-management relations."

One lone, diluted law stands out as the fruit of the Administration's efforts—the Teller Law. Summing up the results of the 1958 legislative program, Under Secretary of Labor James T. O'Connell wryly said: "We didn't accomplish much this year."

Ike Wants to Clean Labor's House With Laws...

Here's what the Administration would like Congress to do next year:

Prohibit organizational or "blackmail" picketing.

Restrict the secondary boycott.

Require detailed reports be filed with the Dept. of Labor covering operation of all health, welfare, and pension funds; handling of all union funds, and all funds exchanged between employers and union officials.

Insure free and democratic operations of unions and secret ballot elections.

Give the Labor Dept. power to investigate reports of corruption and to prosecute union officials who violate labor laws.

...But Labor Wants to Clean Its Own House

Says Al Hayes, president, International Machinists Union and chairman of the AFL-CIO Ethical Practices Committee:

The majority of labor officials are honest.

Corruption within the AFL-CIO is comparatively minor (40 uncovered acts of dishonesty out of 436,000 union officers).

A free trade union—even one that makes mistakes—is necessary to a free, democratic society.

Government regulation of unions would be the first step toward regulation of wages, hours, and working conditions.

Labor is capable of driving union wrongdoers out of office.

The Teller Law, which requires all unions to report condition and operation of health, welfare, and pension funds to the Secretary of Labor, is described by Mr. O'Connell as "wholly inadequate."

Law Without Teeth — "The Secretary has no investigatory powers under this law. He is not given the power to prosecute. There are no criminal provisions to cover embezzlement or kickbacks — the two main sources of danger," Mr. O'Connell explains. "We have a bill but we don't think it does very much."

There are other inadequacies in the Teller Law which are irking Administration officials. One is the lack of provision for a standard reporting form. The Labor Department is receiving thousands of reports, each handled in a different way. The filing job is almost impossible.

No Final Authority — Even worse, there is no provision as to who will interpret the law, says Mr. O'Connell. Justice Dept. says neither it nor the Labor Dept. are officially empowered to interpret it.

Labor Dept. officials see themselves as just custodians of records under the Teller Act. "We are going back to get the law tightened up," said Mr. O'Connell.

Kennedy-Ives Reaction—Failure of the Kennedy-Ives Bill, as it was originally written, to become law is not lamented by the Labor Dept. But the department is bitter over delays in the House which frustrated Administration attempts to get amendments attached which it says would have made it a satisfactory piece of legislation.

"We'd rather wait and get a good law than accept one that appears to do the job but doesn't," a Labor Dept. spokesman said.

In the Senate, they don't see it that way. Commented one staff member of the Senate Labor Committee: "It might be too bad that it (Kennedy-Ives Bill) didn't pass. The next bill to come up might be worse for management."

Ike Dissatisfied—The President was dissatisfied with the Kennedy-Ives Bill for a number of reasons. He felt it failed to provide adequate machinery to enforce standards necessary to proper handling of union funds.

It failed to deal with boycotting and picketing problems, and this failure, said the President, would have given greater impetus to the use of those weapons. It weakened existing law and, finally, it did not move at all toward recognition of appropriate state responsibility, he said.

Management Objects — The Kennedy-Ives Bill was unpalatable to all concerned. Speaking for management, William A. McDonnell, president of the Chamber of Commerce of the U. S., said some amendments tacked on in the Senate were "highly objectionable to business."

"At the last minute," Mr. McDonnell explains, "an attempt was made to force its passage in the House without committee hearings. The National Chamber opposed that procedure."

Dim Hopes—While the Administration has been unable to crack the stone wall of union autonomy in the past six years, it has not given up the ghost.

Asked what he thought were the chances for labor reform legislation in the next session of Congress, Under Secretary O'Connell shrugged and said, "I wish I knew for sure."

That's about as optimistic as anyone close to the labor scene in Washington can get. Those in the Capital who favor Ike's labor program, but who are not officially committed to support it, make no bones about the chances next year. They are pretty slim.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.



IT'S EASIER: Central source of air supply provides greater flexibility in operation of these Brainard power stretcher and cutter.

Simplified Strapping

It Saves Manpower and Is Safer

■ In an unusual installation, an underground air line system from factory to railroad siding is servicing eight stations for power tools used to strap carloadings of heavy pipe at Standard Pipeprotection Co., St. Louis.

Under the new system, one man with a single power strapping tool is able to secure pipe loads on 16 cars more safely and in less time than was required by two men, reports Henry W. Vondrasek, vice-president of the pipe coating firm.

Joint Development — Developed jointly with Brainard Steel Div. of Sharon Steel Corp., the system should be applicable wherever power strapping tools are used at some distance from the air supply, says J. D. Boyer, chief field engineer for Brainard.

Previously, Standard had run long lengths of hose from the near-

est building to its rail spurs. This required considerable time and extra handling by the strapping crew and ran up maintenance costs.

Central Control — Now, 3/4-in. coated and wrapped pipe has been run underground at right angles from one of the factory buildings to the siding yard and between two car tracks. From a central point, other pipes carry air lines to eight stations spaced one car length apart.

Safety Feature — Before a gondola is loaded, 2-in. heavy-duty strapping is placed across and into each car at six places. After the car is loaded, the operator climbs on top of the load and tensions the strapping around the pipe. Since no manual pumping is required, the worker is in no danger of falling, and the power tool permits faster and more efficient work than would be possible with a hand tool.



The Thor: Who Makes What?

Prime Contractor

Douglas Aircraft Co.

Airframe

Douglas

Powerplant

North American Aviation

Guidance

AC Spark Plug
Western Electric

Nose Cone

General Electric

Defense Pins Its Hopes on Thor

After a year of debate, McElroy rules for Thor over the Jupiter.

It means that Jupiter output will be stopped, although its usefulness is not necessarily ended.—By R. M. Stroupe.

■ Defense Secretary McElroy this fall will reveal his decision on which land-based intermediate-range ballistic missile will be built. His decision will be to order full production of the Air Force Thor.

The choice as to whether the Thor or the Army-developed Jupiter would be produced has been pending for a year. It confronted Charles E. Wilson, when he was Defense Secretary, and it has awaited Mr. McElroy's action since he was sworn in last October.

Jupiter Sidetracked—Expected is an order from the defense chief to stop production of the Jupiter at a given point—perhaps not immediately. Thor output will go into high gear. First delivery of the 1,500-mile weapon to overseas bases already has been made, and expanded deliveries will follow.

Dropping the Jupiter as a potential weapon may not end its use as a specialized research vehicle. As the Jupiter "C," the missile may be the basic unit in the Army efforts to launch lunar probes.

Year-long Debate—The Thor-Jupiter debate of the past year came about, almost inevitably, because of the conditions under which the projects were begun. Both the Thor and Jupiter programs were started in 1955, and both were assigned very high priority by the military. But

the Jupiter was considered a back-up development, to insure the U. S. of a midrange weapon in case the Thor turned out to be a dud.

Its experience with the Atlas intercontinental missile gave the Air Force some important tools to use on the Thor. Some of the same components and sub-systems are incorporated in both missiles. The Army and Navy, initially working jointly, got busy on the Jupiter.

Navy Steps Aside—Both the Thor and Jupiter projects were well into the developmental stages when the Navy decided to drop out of the Jupiter program. Requirements for a shipboard-launched missile could best be met by a solid-propellant missile, rather than the liquid-fueled Jupiter, the Navy said. The Navy then put in motion its Polaris project, now counted on heavily in

strategic defense planning.

By 1957, the Thor and Jupiter were scheduled for full-scale flight tests. Errors of various types prevented successful flights of the first two Thors and Jupiters. The third Thor blew up on the test stand. But the third Jupiter made a fully successful flight.

Behind McElroy's Decision—The Army, apparently, had gained the edge over the Air Force in IRBM development. From the Defense Dept. level, though, the Thor was still seen as the primary midrange weapon. Production commitments had been made, with Douglas Aircraft Co. as the producer. If the Thor reliability could be assured, the missile would be ready for output.

Mr. McElroy believed it would be possible to achieve reliability of both the Thor and Jupiter by this fall. He now is confident that the Thor is a dependable and usable weapon. His decision, therefore, is to have the primary IRBM produced in quantity.

Another Problem—In the inter-continental missile field, the Defense Secretary has another problem. The Air Force has produced excellent results in firing the Atlas, while the Titan has come along more slowly. And entering the field is the solid-propellant Minuteman, which may be operational by 1963.

Design of the Titan is more advanced than that of the Atlas, and its range and payload may be superior, the Defense Dept. says. But the Titan, viewed as a back-up for the Atlas, may have to be eliminated as an ICBM project, to permit heavier concentration on the Minuteman. The Air Force does not confirm that the Titan may be dropped and says there is no change in the developmental program.

Budget Influence—Budget considerations would be the most influential factors that would lead to a decision to scrap the Titan this year. The same factors could cause a halt in some of the newer Navy and Air Force aircraft programs.

Defense Contractors

Some Gain, Some Lose in Weapons Shift

■ Companies going after defense contracts must stay alert to shifting military needs. If they don't, they may lose their rank as top suppliers of military goods.

What's more, the trend to complex weapons systems results in more awards for large concerns with the ability to handle their development and production.

Aerial Attention—These facts are apparent in latest Defense Department statistics on prime military contract awards. Consider this: Almost all of the top 100 companies in terms of awards are working on research and manufacture of aircraft, missile, ships, and related supplies and equipment. They are mainly large firms with specialized engineering staffs.

In the swiftly changing defense picture one-third of the concerns included in the top ten for the

period 1950-1957 have been displaced. (See tables.) When only contract awards for 1957 are considered three companies—Douglas Aircraft, Lockheed Aircraft, and Curtiss-Wright Corp.—drop out of the select list. They are replaced by Hughes Aircraft, Chance Vought Aircraft, and The Martin Co.

General Dynamics Corp. made the biggest gain during the weapons shift, moving from fifth place to first in awards. The company's share in the total net value of all contract awards has increased from 3.4 pct to 6.5 pct.

Subcontractors Share—Subcontractors still have a large share in filling defense contracts. Only a part of contract funds are kept by prime contractors for work done in their own plants. The Defense Dept. points out that subcontracting was substantial

How Weapons Shift Affects Top Contractors

July, 1950-December, 1957

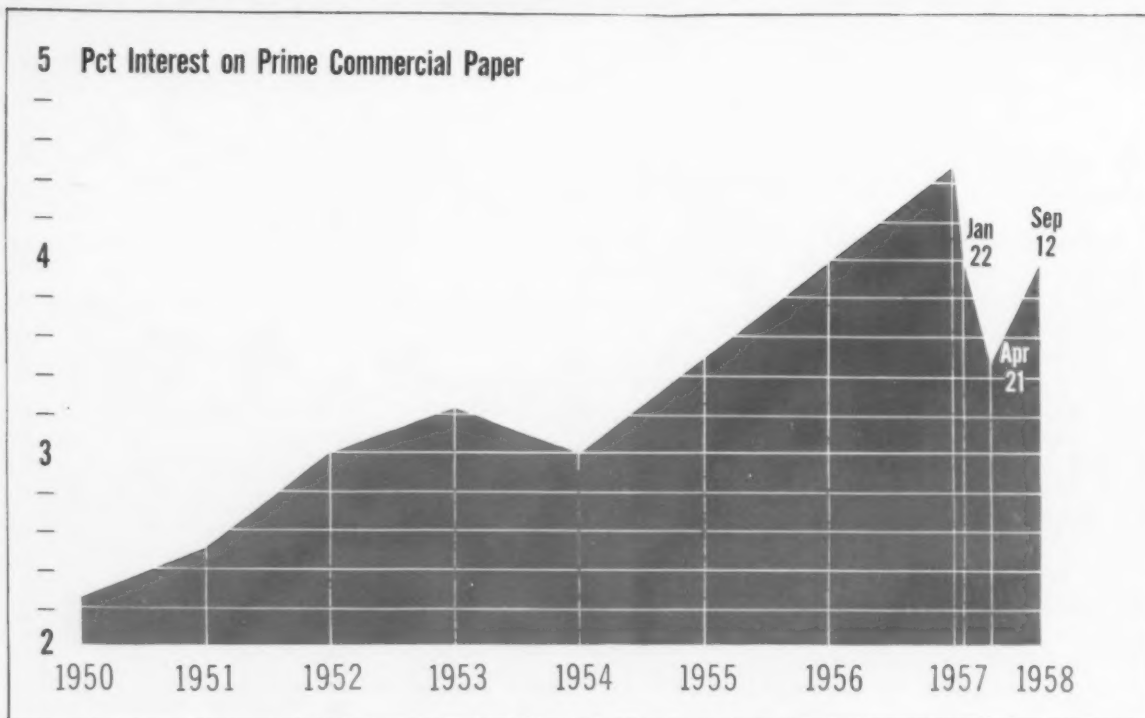
	Rank	Pct. of Total
Boeing	1	4.6
General Motors	2	4.4
United Aircraft	3	3.7
General Electric	4	3.5
General Dynamics	5	3.4
North American	6	3.0
Douglas	7	2.8
Lockheed	8	2.6
AT&T	9	1.9
Curtis-Wright	10	1.6

January-December, 1957

	Rank	Pct. of Total
General Dynamics	1	6.5
General Electric	2	5.3
United Aircraft	3	4.0
Boeing	4	3.7
AT&T	5	2.7
North American	6	2.6
Hughes Aircraft	7	2.1
Chance Vought	8	2.0
Martin Co.	9	1.9
General Motors	10	1.8

Source: Department of Defense

Business Loan Costs Are Rising



Interest Costs May Hit New High

Borrowing charges may rise to 4.5 pct this month, could reach 5 pct before 1958 ends.

Sharp increase may catch the metalworking industry off balance.—By K. W. Bennett.

■ The cost of borrowing money may hit a record high in the fourth quarter. Prime commercial paper, representing money borrowed by top U. S. corporations, now requires an interest rate of 4 pct. This figure may reach 4.5 pct during October. A few bankers expect to see interest costs of 5 pct within the next 60 days.

At 4.5 pct, interest costs on borrowed money will hit the record levels achieved during 1957, a peak that hasn't been surpassed since

1929. At 5 pct, interest costs will beat even this record.

Bond Market Rebounds — The rising interest rate will catch much of the metalworking industry with its assets down. It marks one of the sharpest increases in money costs in the nation's history, and one that still has economists mildly baffled. High grade (A1-plus) bonds hit a 4.17 interest peak last year. After falling to a low of 3.56, they rebounded to 4.12 by mid-September.

Industrial bonds, in the words of a banking economist, "Aren't yet at their record 1957 peak, but they are rising and may well beat the record they made last year."

Higher interest rates mean tighter money. For the small borrower, they mean greater difficulty in ob-

taining funds, and higher cost per borrowed dollar when he seeks needed additional capital.

Scarce and High? — Banks and financial houses often remark, "The money is there. You just must pay more to get it." This phrase, common at the peak of the 1956 credit shortage, is common again. But money cost more to borrow in 1957, a recession year, than in 1956, when credit was tight. Fourth quarter 1958 could see a combination of both money scarcity and high borrowing costs.

Money is tightening, already, as it gets more expensive. According to bankers and economists, here's what is happening:

Housing Contributes — Housing and construction are soaking up

money at an accelerating pace. Housing starts alone will require \$1 billion more in 1958 than in 1957. At the same time, construction generally is gaining ground. Builders, and buyers of buildings, are borrowing more heavily. Bankers at the American Bankers Association meeting last week report that mortgage rates are already tightening.

Capital expenditures, outlays for new plant and equipment, will rise by \$1 billion in the fourth quarter over the third quarter. This estimate is already regarded as conservative.

So Do Others—Agriculture, another important borrower, is on its way to a record crop year. This is already reflected in rising borrowing levels at rural banks.

Detroit's auto sales forecasts, if correct, indicate a greater demand for installment credit, perhaps as much as 20 pct. This will show up as soon as the fourth quarter.

All segments of business are rebuilding inventory. Government sources estimate that U. S. goods consumption exceeded production by \$8 billion in the second quarter. Much of this must be replaced. Add to these five credit demands; a normal, second half rise in all types of borrowing in the U. S.

Metals Late Start—Metalworking is moving into the money market to do its seasonal borrowing at a late date. Heavy industry prices were at their lowest in April of this year. Food and textile industries began to raise their borrowing rate in August. So did sales, finance, transportation, petroleum and coal, public utilities, mining, and many manufacturers.

Borrowing by metalworking industries began to recover only in September. Economists have taken to calling 1957 a "metalworking recession." Metal producers and metal workers have the longest down curve in their borrowing history, and the latest upturn, of any of the industries listed.

A banker's advice, "If you're going to borrow some cash in fourth quarter, the sooner the better. The longer you wait, the more it will cost."

Metalworking Paces Educational Giving

■ **Metalmaking and metal using companies believe in industrial giving for higher education.**

That's what the Council for Financial Aid to Education discovered in a survey of 275 firms representing twenty-two branches of industrial, financial, and utility activity.

Above the Average—The twenty-two companies in the primary metals industry gave over \$3.3 million to education during 1956, the Council says. One of the firms in steel, nonferrous, and heavy manufacturing industries led the pace in terms of the largest single company gift to education—\$1.8 million.

Metal firms also gave over 37 pct of their total gift dollars for educational purposes. This is above the average for all the firms included in the survey.

The 275 firms gave \$28.6 million to education in '56 or 34 pct of the \$84.4 million they donated

for all philanthropic purposes.

Average Was \$150,000—The lowest single gift for education among the steel, nonferrous and heavy manufacturing firms was \$4000. Average for twenty-two was \$150,000.

Company Average—The Council estimates that all U. S. business concerns contributed about \$110 million to education in 1956. Average contribution by the twenty-two groups in the survey by company was \$104,276. Makers of electrical machinery had the highest group average in this category. The seven companies reporting averaged \$337,300. Banks had the lowest average—\$15,000.

Twenty pct of the 275 companies gave \$100,000 or more to education in '56. More than half of the total giving was for two purposes: unrestricted use, current operations—25.7 pct; and plant expense—14.5 pct. Another 19.5 was donated for student aid.

How Metalworking Aided Education in '56

	Companies Reporting	Pct of Net Income Contributed
Primary Metals	22	0.22
Fabricated Metal Products	15	0.18
Machinery	23	0.28
Mining	4	0.26
Transportation Equipment	23	0.37
Electrical Machinery	7	0.38

Source: Council for Financial Aid to Education



HEADS ENGINEERS: Emil Kern, vice president, engineering, Allegheny Ludlum Steel Corp., is new president of Assn. of Iron & Steel Engineers.



RETIRING PRESIDENT: Leonard Larson, chief engineer, Cleveland district, Republic Steel Corp., headed engineering group during the past year.

Engineers Told How to Cut Costs

Cost reduction measures receive attention at iron and steel engineers meeting.

Direct reduction and vacuum pouring highlight engineering sessions.

■ Cost reduction as well as engineering problems were discussed at last week's biennial iron and steel exposition and convention of the Association of Iron & Steel Engineers in Cleveland.

How to reduce maintenance costs was the subject of a paper by Harold B. Maynard, president of H. B. Maynard and Co., Inc., Pittsburgh.

To Control, Measure—Mr. Maynard's main point was that in order to control costs you must be able to measure these same costs. As a case history he cited a plant where the so-called Universal Maintenance

Standards or UMS system has worked out successfully.

The four factors essential to success of the UMS plan, according to Mr. Maynard are: (1) Proper organization of the work, (2) properly developed work standards, (3) a qualified standards applicator, and (4) adequate training of the work force.

Robert A. Blackburn, of Koppers Co., Inc., and Dr. Marvin J. Udy, of Strategic-Udy Processes, Inc., reported on developments in the Strategic-Udy direct reduction process.

Direct Reduction Versus Blast Furnace—Success of this process, the speakers said, may completely replace blast furnaces in areas where electric power is cheap and natural fuels are scarce.

How It Works—The S-U process was described as a variation of established electric furnace smelting

techniques. The process uses a rotary kiln for pre-reduction of iron ore before charging to an electric smelting furnace. Pre-reduction lowers the power requirements of the electric furnace smelter, enabling the process to compete with established methods of iron ore reduction.

Elliot A. Reid, assistant chief metallurgist of Bethlehem Steel Co., discussed vacuum pouring of ingots intended for forgings to be used in highly critical applications such as nuclear reactor components and parts of missiles.

Vacuum Pouring—Vacuum pouring, which means creating a vacuum between the pouring spout of the ladle and the ingot mold, is aimed at minimizing molten steel's contact with oxygen in the atmosphere. At the same time, dissolved hydrogen and other gases are better dissipated.

Reds in Trouble on Tin Dumping

Asian Nations Resent Attack on Their Markets

Russia beats hasty retreat as its move on Free World tin has political repercussions.

This, and a wobbly international Tin Agreement is giving most markets the jitters. — By F. J. Starin.

■ The price Russia is faced with for upending Free World tin markets may be stiffer than she had bargained for.

Her dumping techniques broke the price structure in both New York and London. But it cost her valuable ground in the race for prestige in the important Asian nations that are tin producers.

Russia's Story — At Djakarta, Indonesia, Russia officially disclaimed responsibility for the break in Free World tin markets. She leveled a meaningless accusation at "Free World speculation." Indonesian Foreign Minister Dr. Subandrio appeared to "buy" the Russia explanation. But K. J. Cumming, president of the Federated Malay States Chamber of Mines said, "It should now be clear to everyone that Russia is dumping tin on world markets to wreck the International Tin Agreement."

Russia sympathetically, but vaguely, agreed to limit her tin exports for the next two years. Efforts to clarify and amplify this met with an absolute iron curtain on information.

The Russian Charge d'affaires at Djakarta also dropped some veiled hints that Russia might be willing to join the International Tin Agreement.

Buying & Selling — In London late last week there were definite indications that Russia had suddenly become a big buyer of some of the

tin she had previously dumped. Prices were obviously geared to inject some confidence in the jittery market. But, in the afternoon, after the London Metals Exchange officially closed, it appeared Russia unloaded on the curb the metal she bought in the morning, for whatever she could get.

Trying to figure what Russia is up to naturally has the New York market up in the air. But lately, trying to figure the position and status of the International Tin Agreement as well, has the U. S. market running downright scared.

Right after the crisis the International Tin Council held a meeting in London. Speculation on ITC centered around (1) why it had suddenly dropped out of the LME market, leaving it vulnerable to Russian pressure, and (2) the financial condition of the buffer stock.

The gathering answered neither

question very satisfactorily.

Unanswered Questions—On why ITC dropped off the market, Georges Peter, buffer stock manager, pointed out merely that he had been operating with "special funds," and was not obliged to support the market.

A majority of observers say the buffer stock manager quit simply because he ran out of money. He still has no money, say these critics. The continued existence of the buffer stock now depends on its being able to borrow money.

Strategy—Another theory is that ITC may have deliberately lay back to try to flush out as much Russian tin at one time as possible. Working in favor of this theory are (1) Russia is only permitted to sell 750 tons of tin per quarter in England, and (2) Russia herself is a big user of tin.

What About Russian Tin?

One of the factors making it relatively easy for Russia to upset Free World tin markets is the lack of concrete information about her own tin industry.

Russia has officially released nothing on her production and consumption, and very little on her exports.

Here is the best of Russian figures, and estimates of observers in Free World:

Export

Before 1955—Negligible
1956—1500 tons

1957—9300 tons
1958—18,000 tons*

Consumption

1952—12,000 tons
1953—12,500 tons
1954-56—Nothing is known.
1957—60,000 tons
1958—56,500 tons*

Production

1952— 9000 tons
1953—10,000 tons
1954—11,000 tons
1955—12,500 tons
1956-57-58—Nothing is known.
(Metric tons.)

*At current rate.

Helping Business Is Big Business

Experts Guide Industry Through Capital Maze

If you are doing business with Washington, there's plenty of help available.

Here's a rundown on the fastest-growing industry in the nation's capital — By R. L. McCormick.*

■ Helping businessmen do business with the Federal Government has become the fastest-growing private industry in Washington.

Washington is a base of operations for 650 national trade, professional, social, and labor organizations; 1,000 registered lobbyists; 4,000 private attorneys, many of them specialists in Government cases; 200 manufacturers' agents; 150 public relations offices.

Mushrooming Industry—Counting clerical and other staff personnel, these pursuits provide employ-

ment for more than 38,000 persons—up nearly 5,000 since mid-1955.

To this mushrooming industry come businessmen in quest of Government contracts, tariff adjustments, favorable laws, representation before Federal agencies, advice in countless other matters that arise when the paths of Government and business cross.

On the other side of the coin are gains offered to the Government—in the form of closer ties with the business community, insights into business attitudes on national issues, greater opportunities to locate the best products at the best prices.

Associations—National membership groups of every size and outlook share the advantages of a Washington location. From the far-flung U. S. Chamber of Commerce to the National Council of Teachers of Mathematics, they carry out tasks oriented to their members' interests.

By and large, these tasks fall into four broad categories: Advice and counsel to members; presenting the membership's views on Government policies and legislation; maintaining contact with allied groups; serving as the group's publicity spokesman.

Manufacturers' Representatives—Ask a manufacturers' representative to describe his work and he will likely tell you: "Because we know where to go and whom to see in Washington, we save businessmen time and headaches in dealing with the Government."

As key men in a unique buyer-seller market, these representatives not only plug company or client products but assist Federal purchasing officers who know what they want but may not know where to find it at least cost to taxpayers.

Attorneys—Private law practice in Washington stresses specialization. For example, 250 lawyers concentrate on cases before the Federal Communications Commission; 400 are experts in patent law; others specialize in taxes, international law, other specific fields.

Opportunities Ahead—With Congress anxious to divert more Federal funds to small business, and with Government buying on the upgrade, Washington's purveyors of service-to-business anticipate even greater demand for their uncommon talents.

All agree that doing business with Uncle Sam is no simple undertaking at best—but short-cuts to results, beneficial to business and Government alike, are there for those who know where to look.

*Robert L. McCormick is president of McCormick Associates, Inc., research and public relations counsellors, Washington, D. C.

Behind Washington's Thriving Industry Relations Business

The rapid growth of firms which specialize in helping business get along with the Federal Government is traced to these factors:

Government Buying: The Government is well-established as a major market (\$31 billion spent, most of it by Pentagon, for goods and services in 1957). More companies hope to sell the Government the things it needs.

Government Regulations: The Government is taking over a bigger regulatory role in the nation's economy. More businessmen find themselves caught up in the federal machinery.

Congressional Interest: Congress is paying more attention to business "specifics," such as company policies, pricing, quality control, overseas investment.

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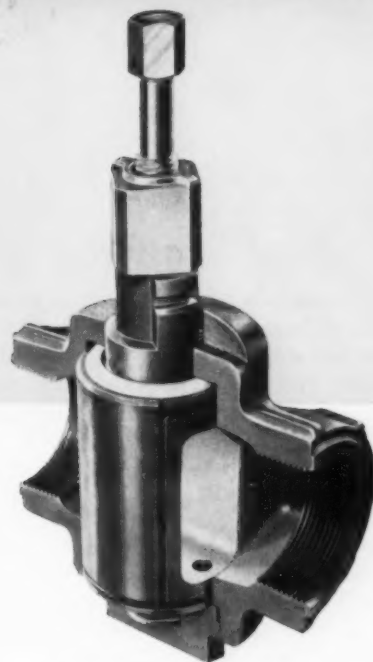
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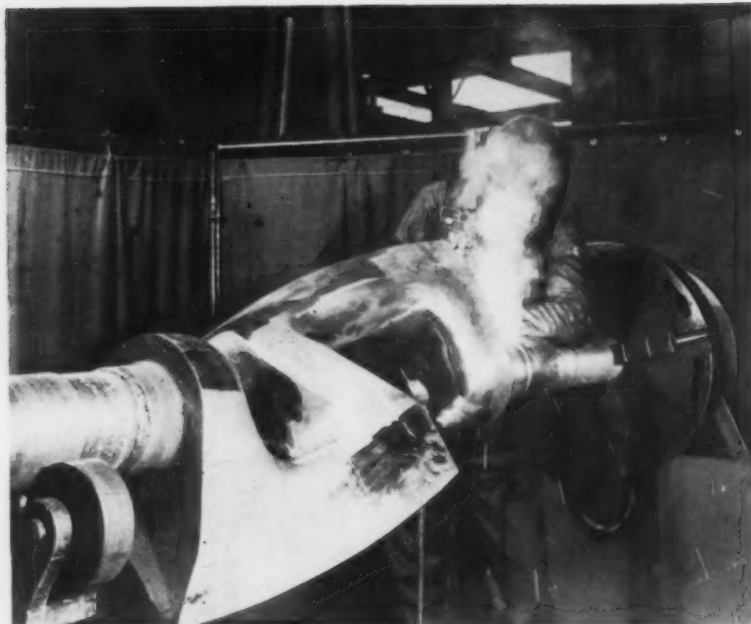
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PLAN AHEAD: The problem was to weld low carbon steel axles to a 650-lb, S-shaped, cast stainless steel mixer blade. By rigging up an old lathe chuck and a variable speed drive to hold and rotate the work, the welder at Baker Perkins Inc., Saginaw, Mich., was able to complete the series of deep, penetrating welds in about four hours.

New Detroit Service

New facilities have been installed at Jones & Laughlin Steel Corp.'s Detroit warehouse for slitting and banding a wide range of steel and aluminum.

J&L says its new slitting line can handle coils with inside diameters of 16 in. and larger. It is equipped with X-Ray gaging equipment for close tolerances, and includes an automatic bander. Capacity of the slitting unit is 49 inches in width.

A 12 in. auxiliary slitting line has also been installed for small coils and short runs.

New Republic Mill

Republic Steel Corp. announced plans to install a new blooming mill stand in the openhearth dept. of its Youngstown plant. The equipment will cost about \$1.3 million.

Work on the new two-high stand is expected to be completed by Oct.

6, says J. H. Graft, Youngstown district manager. About 300 employees in the blooming mill and openhearth dept. will be idle while the new equipment is being installed, Graft said.

Rail Fees Hiked In Eastern Ports

Industrial shippers will have to pay a new rail service fee at East Coast ports because of a recent government action.

Freight imported or exported through New York, Philadelphia, Baltimore, and Norfolk will be subject to a fee of 6¢ per 100 lb. The charge is part of the rate increase package the Interstate Commerce Commission allowed the railroads early in September.

Decision Was Pondered — New port charges will cost shippers an estimated \$12.6 million a year. But despite the increased revenues available to railroads, the roads debated

at length whether to impose the new fees. Main lines serving Philadelphia, Baltimore, and Norfolk initially were hesitant to levy the 6¢ charge.

Had these lines decided finally to pass up the fee, the Port of New York might have lost additional business to southerly ports.

Two-Year Limit On Union Elections

A National Labor Relations Board union representation election will hold for two years—but no longer—regardless of the length of the contract management finally signs.

In a new ruling, the NLRB holds that any term over two years does not give employees enough freedom of choice in selecting a bargaining agent. The ruling came in a dispute over a five-year contract, but the Board held that not only was this too long a term, but that anything over two years was too long.

Seeking Balance — The ruling, according to the Board, is an effort to achieve a better balance between "fostering stability in labor relations while assuring conditions conducive to the exercise of free choice by employees."

Previously, the Board had banned a rival union from challenging an established union even if a contract has more than two years to run if the contract for bargaining representation applied to a "substantial part of the industry" involved. This was too hard to administer, the Board says.

Correction

In an article "Big Steel Builds a Pilot Mill" (The IRON AGE, Sept. 18, p. 46), a listing indicated that U. S. Steel Corp. owned a blast furnace at Bruceton, Pa. This furnace is wholly owned by the Bureau of Mines but is sometimes operated cooperatively with private industry on experimental problems of national interest.

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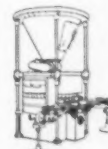
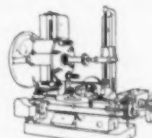
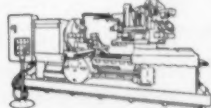
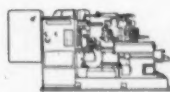
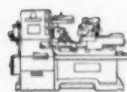
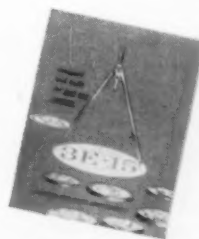
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At one time polishing operations accounted for 60% of the total cost of these caps. Today, using Bridgeport High Luster Brass Strip, Lenox has cut these costs a whopping 20%! And blanking, stamping, punching and plating are easier with this finely finished standard quality Bridgeport strip.

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Royce A. Hardy

A Miner Digs In at Washington

After a year in the Capital as Ass't. Secretary of Interior, Mr. Hardy assays the yield.

He sees better days ahead for the mining industry.

■ Royce Hardy has faith in the domestic mining industry. He has been close to it most of his life. He likes it. And now, almost daily, he studies the industry's problems, hopes, and expectations.

Formally, he's Royce A. Hardy, Assistant Secretary of the Interior for Mineral Resources. This means he supervises policies of a number of Interior Department agencies. He oversees the work of the Bureau of Mines, Geological Survey, Office of Oil and Gas, Office of Minerals Mobilization, Defense Minerals Exploration Administration (soon to become the Office of Minerals Exploration), and Division of Geography.

Setbacks Expected—He also had to carry much of the burden of the Eisenhower Administration's recent efforts to aid U. S. mines with subsidies. The plan to offer price supports to bolster lead, zinc, fluor spar, and tungsten output was rejected by the House late in August. Mr. Hardy pressed for passage virtually until the end of the 85th Congress.

Disappointments can be expected in government service, just as they can in the mining business, he concedes. He speaks with enthusiasm about both of these working areas.

Future in Mining—There's a good future in mining despite the present difficulties of the industry, he says with assurance. What does a man need now, besides capital and technical knowledge, to be success-



ROYCE HARDY: A mine operator needs good luck and perseverance.

ful in mining? "Good luck and perseverance," in Royce Hardy's judgment. He stresses the value of staying power as an asset to the mine operator.

The imbalance between supply and demand, the soft-spoken Nevada believes, is only temporarily bad for U. S. mines. Over the long pull, he looks for an ever-growing demand for all kinds of minerals.

Mining in His Blood—A mining engineer's son, Mr. Hardy is a registered professional mining and metallurgical engineer. He was graduated from the University of Nevada with a B. S. degree in mining and worked for some ten years for the Getchell

Mine, Humboldt County, Nev. From his job as general superintendent of the Getchell Mine, he moved to Manganese Inc., Henderson, Nev., where he was vice president and general manager.

Now, at 37, he holds a highly demanding post in the government.

Praises Civil Service—"Working in Washington," he says, "is a real opportunity, for two reasons: It's an education in the complex nature of government operations. And it gives the individual a chance to perform a service for the country."

He has praise for those who make government work their career.

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The quality of your spring steel parts or products is only as good as the spring steel itself—its response, its performance. When you specify J&L it means all the advantages of most exacting quality control—from ore to finished coil. Particularly important is the opportunity to utilize J&L's Restricted

Specification processing to achieve the qualities necessary for optimum end-results. With individual restricted specifications met, oftentimes production operations can be simplified and in many instances product quality improved. As an example look at this . . .

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Spring Steel
Analysis—AISI—1050 annealed
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Width tolerance $\pm .005$
Temper—B78 Max.
Finish—#2
Coil size 250/300 lbs. per in. width

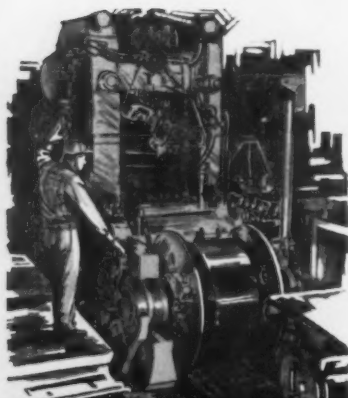
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Uniformity of shape and gauge made possible change from cut lengths to coils, reducing handling and inspection. Increased speed of production line. Amazing thickness control eliminated 2 quality control stations.

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(Jal Zinc)	Painted

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FORMERLY THE COLD METAL PRODUCTS COMPANY

Big Surge Coming in 4th Quarter

Detroit's automakers have every intention of going full blast in fourth quarter.

Added to the general improved business outlook, it could mean a big upsurge.

▪ Out in Detroit, Chevrolet officials indicate that the final three months of the year will be one of the biggest fourth quarters in the GM division's history.

If that's true, and there is no reason to doubt it, the entire auto industry appears to be in for a major production spurt later this year.

Last Quarter Surge—Adding this anticipated strength to the already apparent rate of business recovery, it looks like business is in for a really good last quarter surge.

Of course, the auto industry remains a question mark even in spite of apparently sincere optimism. On its side, there are the new models, representing radical styling changes in many cases—the kind of change that used to mean terrific sales spurts.

Fast Start—They talk confidently of a 5.5 million car year, plus about 400,000 foreign cars, a factor that they are now taking into serious consideration in making their market projections and predictions.

In any case, automakers are starting their initial 1959 model schedules on the basis of full or nearly-full production in the early months. After that, it will take more than confidence to determine production schedules and production will be geared very closely to sales.

Maximum Output—But, barring

further labor trouble in the auto industry, you can look for a major pickup when 1959 models start rolling. Chevrolet, for example, will hit maximum output by Oct. 21, when the division will reach 86,500 employment.

Of course, the auto industry isn't the only thing that is working on the business buildup. But it has been one of the lagging factors up to now. Business other than the auto industry has picked up faster than expected since early summer. A first class auto production rate can do a lot toward restoring the whole economy.

Plenty of Skeptics—There are many who don't believe that the auto industry's new efforts will do the trick. By and large, they are a continuation of the longer, lower, more powerful trend that shows signs of wearing thin.

There is a lot of sentiment that it will take a major change in the industry's concept to revive interest to the point where auto showrooms are again crowded on introduction dates. But if the automakers themselves have any doubts, they are keeping them closely concealed. The 1959's should show significant improvement over 1958 in any case.

Capital Spending Must Go Up

Surveys Questioned—Some business analysts take a dim view of the importance placed on surveys of anticipated capital goods spending.

Their theory: An executive's reply on what he will spend or recommend spending at a given period generally reflects only one thing—his state of mind at the moment.

Below Expectations—So far in 1958, actual spending for capital goods has been well below the anticipated level. In some viewpoints, this is interpreted as a reason to discount latest spending intentions proportionately.

Actually, what the difference probably represents is a tightening of budgets that became general throughout industry. For example, a vice president may have figured his minimum needs and reported he would spend that figure. Then, he may have found even the minimum money just wasn't there when the time came.

Backlog Building—This universal tightening of purse strings in 1958 has left in its wake a potential backlog of equipment that was needed, but couldn't be financed at the time. In many cases, it was false economy. But when the comptroller is in the driver's seat, as is the case in most companies this year, the initial cash outlay is hard to promote.

The \$19 million in new orders for metal cutting tools in August, for example, is entirely unrealistic (see P. 65). Industry's minimum needs far exceed that as a monthly rate of spending.

With the better outlook for overall business, you can expect a lot of improvement in the future. It won't come easy, but inevitably outlays for capital equipment will have to come back to a realistic figure. And spending in the months ahead may exceed, not fall below, anticipated levels.

Chevy Admits Small Car Plans

It Already Has Some of the Tools and Dies

Attention is focused on the small car, and aluminum at preview of the 1959 Chevrolet.

General Manager Cole gives his thinking on both. New models show some major changes.—By H. R. Neal.

■ Chevrolet general manager Edward N. Cole was telling newsmen about the 1959 Chevrolet and what his division expects to do with it in the coming sales year. The inevitable question was thrown in.

"Does Chevrolet have a small car in the works somewhere?"

Always—Mr. Cole hedged that Chevrolet has "always had a small car in the works," and even constructed a plant to manufacture one in 1947. But he assured his listeners, "We haven't purchased one pound of productive material for a small car."

What constitutes productive material? "We term productive mate-

rial as material that we use actually in the car, not tools and dies."

Would Mr. Cole make the same statement about tools and dies? "No sir, but that does not mean that we will purchase one pound of productive material to run over those tools and dies."

This was the first admission by any GM executive the auto giant had anything more than "plans."

Interest in Aluminum—On aluminum engines, Mr. Cole again tried to be evasive. But he did admit: "There had been a lot of work done in that area, and we are extremely interested in the advantages of the lightweight materials from the standpoint of machinability, castability and, of course, production costs. We are not ready to make commitments as to the full production of any one of our engines using aluminum, but I can assure you that it is coming under some pretty heavy pressure at the moment."

Aluminum got another boost from Chevrolet's general manager for its part in progress made in rust-proofing of bodies and hardware. He lauded Fisher Body for "doing an excellent job in 1959 of rust-proofing our underbodies, rocker sills, and wheel housings and things of that type."

"On the hardware protection in most areas, such as grilles, we have gone to anodized aluminum to avoid the so-called salt pitting that you get with plated finishes."

Signs in the Air—There are other signs Chevrolet is making way in 1959 for a "light" car, as GM prefers to refer to it, by pushing farther into the medium price field. This will create a larger gap between U. S. low-price, and small foreign cars.

The low-price line for 1958, the Delray, has been dropped for 1959. The explanation: it accounted for only 13.8 pct of Chevrolet volume. The division is expanding its top

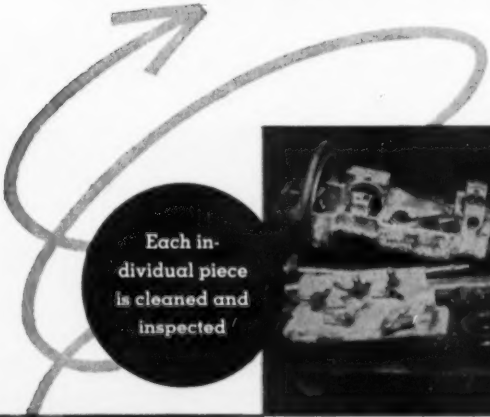


NEW OLDSMOBILE: Super "88" Holiday Scenic Coupe is one of the two new body styles offered by Oldsmobile in 1959. The windshield, as on all new

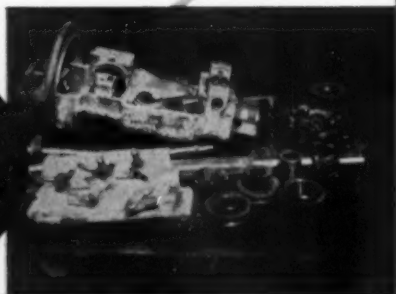
models, has 570 more sq in. of glass, and contours deep into the roof. A heat resistance band across the top of the car cuts heat penetration by 84 pct.

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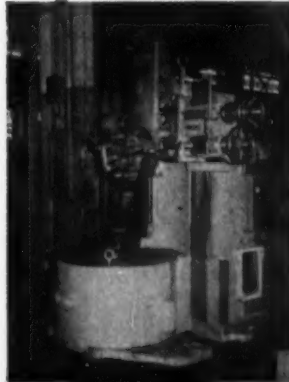
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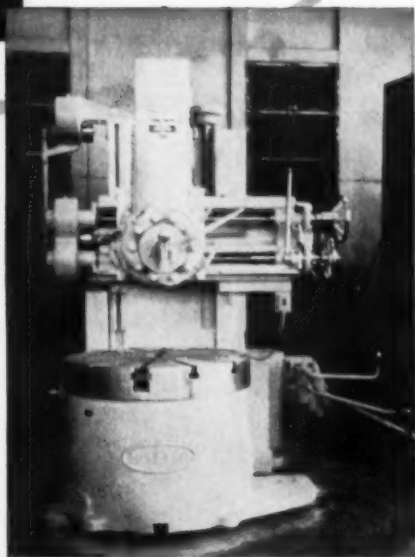


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4427	0.24/0.29	0.70/0.90	0.040	0.040	0.20/0.35	—	—	0.35/0.45	4427
4520	0.18/0.23	0.45/0.65	0.040	0.040	0.20/0.35	—	—	0.45/0.60	4520
4718	0.16/0.21	0.70/0.90	0.040	0.040	0.20/0.35	0.90/1.20	0.35/0.55	0.30/0.40	4718
8822	0.20/0.25	0.75/1.00	0.040	0.040	0.20/0.35	0.40/0.70	0.40/0.60	0.30/0.40	8822

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Automotive Production

WEEK ENDING	CARS	TRUCKS
Sept. 27, 1958*	47,718	14,388
Sept. 20, 1958	37,150	14,110
Sept. 28, 1957	51,552	9,242
Sept. 21, 1957	52,365	13,441
TO DATE 1958	2,864,392	603,049
TO DATE 1957	4,671,371	814,416

*Preliminary

Source: Ward's Reports

line Impala series to four models, from the present two-door hardtop and convertible models. A four-door sedan and four-door hardtop will be added.

Output Up—To meet anticipated heavy demand, the company has geared production in the fourth quarter to the highest in post-war years. Assembly of new models began Sept. 15. Full production will be reached in about a month. Between now and then, Mr. Cole said, an additional 4000 employees will be employed or called back, bringing the company's total employment to more than 86,500.

Chevrolet has made what it considers a number of significant improvements in design, engines, brakes, steering, and handling.

Six-cylinder engines have been improved to provide 10 pct better gas mileage, and more usable horsepower at normal driving speeds.

Better Brakes—Brake improvements are considered by Mr. Cole to be the most important chassis change. They are 27 pct larger than on 1958 models. Proving grounds and cross country tests indicate 66 pct greater lining life. Linings are grooved down the center, eliminating hot spots which cause bonding materials to come to the surface.

1959 Olds Line Has Two New Models

Oldsmobile is offering 15 body styles in its Dynamic "88," Super "88," and "98" series. New in the Dynamic "88" series is a two-door sedan, and a Fiesta station wagon. The Fiesta is also built in the Super "88" series.

In each line are the Holiday Scenicoupe and Holiday Sport Sedan, a four-door sedan and a convertible.

All models have thin roof lines, with more roominess and comfort. Shoulder room has been increased over four inches. Yet the overall width of the car was increased less than an inch.

More Space—Rear seat passengers have over an inch more leg room in the Dynamic "88" and Super "88" series. Trunk space has been increased up to 64 pct. In the "98," a new larger body gives rear seat passengers four inches more leg room.

New engines are smoother and quieter. New cylinder blocks have longer cylinder bores, new reinforced aluminum pistons, connecting rods with greater bearing area, a larger intake valve and a more rigid crankshaft.

Operating Cost Down—Economy has been improved through better carburetion and more efficient "breathing." A new automatic split-

choke system will give better fuel economy, especially during engine warm-up in cold weather.

Most Cadillac Prices Are Unchanged

Cadillac has retained a feature which should prove popular with customers—prices. Factory list prices for the 1959 Cadillac Series Sixty-two Sedan, Coupe de Ville, Sedan de Ville, convertible, Fleetwood Series Sixty Special Sedan and Eldorado Brougham remain unchanged from the 1958 level. Two models, the Eldorado Biarritz and Eldorado Seville, have been lowered \$93. The Series Sixty-two Coupe has been increased \$100.

List prices for most optional equipment, including such major items as heater, radio, air conditioning and air suspension, remain unchanged from 1958.

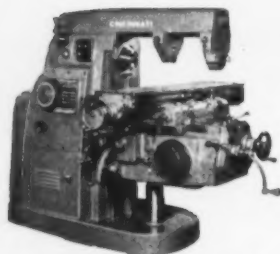
Standard—Cadillac will continue to include many items as standard equipment which are often considered "extras."

THE BULL OF THE WOODS





Dial Type convenience and ease of control is a big factor in producing multiple operation work at low cost.



CINCINNATI Plain Dial Type Milling Machine. Also Universal and Vertical styles. Built in Nos. 2, 3 and 4 sizes, 10, 15 and 20 hp. Catalog No. M-2003.



ARBOR-LOC is a big timesaver in interchanging the seven cutting tools on the table of the CINCINNATI Dial Type Milling Machine shown at the left.

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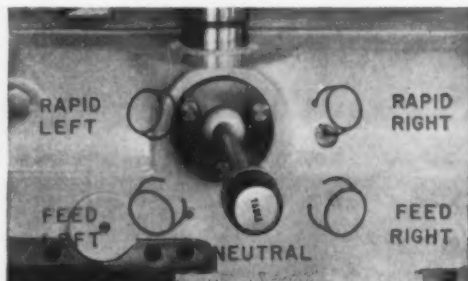
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Cutter and Tool Grinders

More Inflation Is on the Way

Keep It in Mind in Your Future Planning

Administration brass admits privately that "controlled inflation" is in the cards.

Big problem: How to keep it from getting out of hand.—By G. H. Baker.

■ Another round of inflation, powerful enough to shove industrial costs to new peaks during the next 12 months, is in the making. The Federal Reserve Board, despite its conscientious efforts to keep inflation within bounds, is finding its restraining efforts frustrated by the U. S. Treasury.

Blunt truth is that the Eisenhower Administration is doing little or nothing to block the upward trend in costs and prices. Although no one in the Administration will admit it, the fact is that the inner-circle economic advisers are counting on what they privately call "carefully-controlled inflation" to bring about a fresh illusion of prosperity in the months ahead.

Reaping the Harvest—Their only real concern is in seeing that this new burst of inflation does not get out of hand and bring real distress to the economy.

Many of the seeds of today's high prices and high costs were sown by the Eisenhower Administration two years ago when the White House brought behind-the-scenes pressure on steel producers to settle their wage differences with Dave MacDonald on what were clearly inflationary terms.

Dip Only Temporary — Every wage-earner and consumer in the nation has since been paying for the settlement of that strike through

higher prices and a record high cost of living.

Even Ewan Clague, the government's commissioner of labor statistics and careful student of price trends, is openly predicting another upward spurt in the government's Consumer Price Index. Fact that the latest CPI leveled off somewhat (.2 of 1 pct) is definitely not a sign of price stability, Clague says. (It reflects only the plentiful supplies of food available in the late summer.) "This is no downward trend," Clague says. "The index is not tending to stabilize."

Even Price Check Costs Are Rising

The cost of tracking prices is going up.

The government is now spending about \$7,500,000 a year to keep track of wholesale and retail prices, plus a daily spot check of the going prices of key commodities.

Cost of these studies is rising, according to Mr. Clague, whose office computes all of these price statistics. Furthermore, says Mr. Clague, extra dollars would permit his price-checkers to do a better job of relating labor costs to consumer prices and thereby to determine whether wage rises push prices up or price rises push wages up.

Mr. Clague, an earnest and careful student of price statistics, hopes next year's Congress will vote him the extra money (he doesn't say how much more) needed to improve his industrial data.

Ike: Allies Need More Guns

The Broad Hint — The White House is hinting broadly that it expects the next Congress to keep on supporting the armies of all non-Communist nations and some Communist countries (such as Yugoslavia).

This came to light in a recent letter from President Eisenhower to Chairman Green, D., R. I., of the Senate Foreign Relations Committee. Senator Green had asked Mr. Eisenhower if military foreign aid could not be trimmed next year and so-called economic foreign aid (shipments of nonmilitary goods) increased.

The Pointed Reservation — Mr.

Eisenhower wrote politely that he would give "thoughtful consideration" to the request, but he pointedly said that trimming military aid could have "a very harmful effect." Furthermore, he said, he believes U. S. support of non-Communist armies around the world has been cut enough already.

Ike's Reasoning—Here's the key to his reasons for keeping up U. S. support of foreign military budgets:

"The threatening posture of the Sino-Soviet bloc, the importance of our collective security relationships, and the increasing cost of weapons will require a most careful weighing of the security impact of further reductions in military programs."

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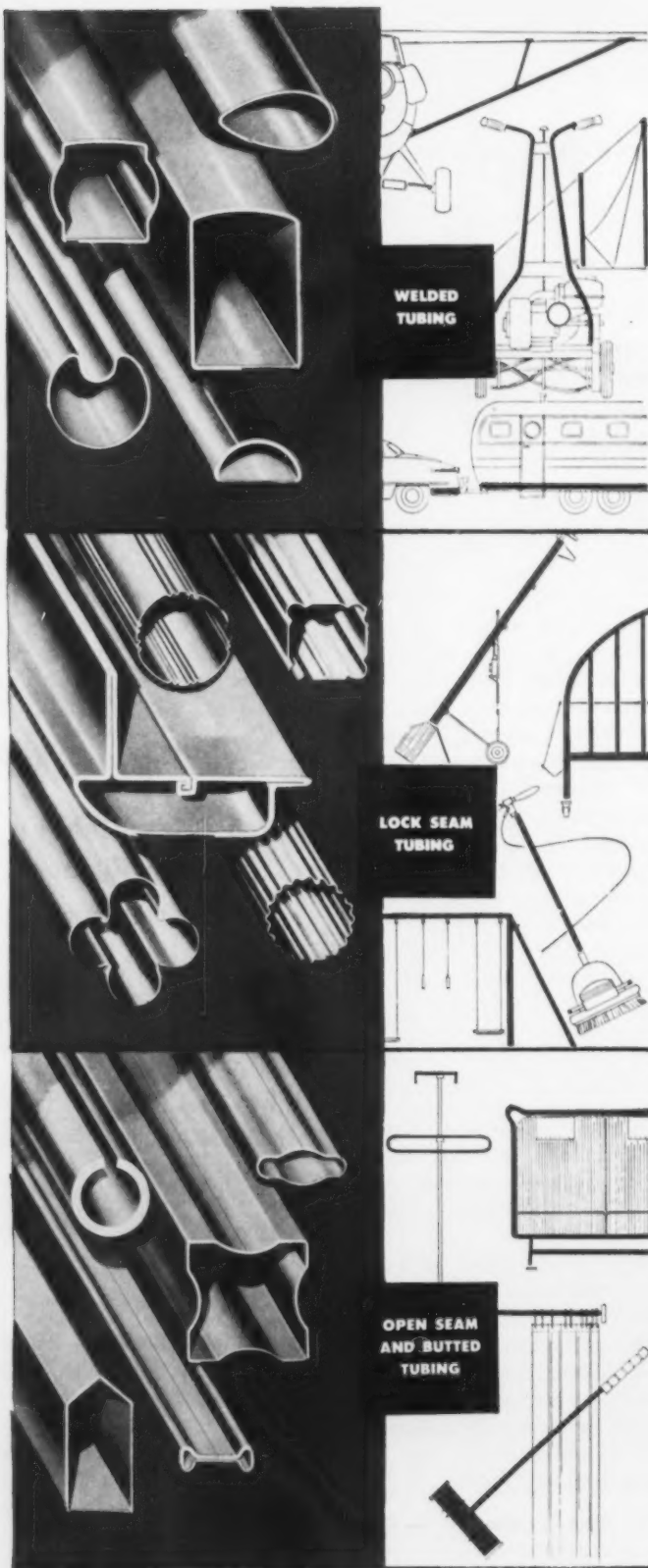
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World Trade Lures Coast Ports

Harbors Aim for Even Larger Share of Global Commerce

Overseas trade is big business for Farwest harbors which now handle 11 pct of all U. S. shipping.

In drive for even more cargoes they have sweeping plans to modernize and expand marine facilities.—By R. R. Kay.

▪ World trade is a \$3.5 billion industry in the Farwest. It makes new records year after year.

West Coast Port Authorities aren't sitting on their hands smug and satisfied. They have sweeping plans for modernization of facilities and for new marine terminals. They will rebuild piers and install the latest equipment to meet the challenge of new ships and new methods of handling ocean cargoes.

Widening Slice—All this activity means that Coast ports are going after a bigger slice of waterborne trade. Right now they handle 11

pct of all U. S. shipping by weight. That's a 4 pct hike over the pre-Korean period.

Global commerce has been on the uptrend by both weight and value in the past several years. It's true that shipping is slightly down so far this year in line with the general business decline. However, there's been a sharp pickup in the past month.

Larger Margin—By both weight and value, the West Coast exports more than it imports. That's also the case for the whole country. But the margin of exports over imports is somewhat higher on the Coast.

The San Francisco Bay area is still king pin of all Coast ports. And it ranks among the nation's half dozen leading harbors. Last year it topped the billion dollar mark for the first time in history.

And pressing it for leadership is the Los Angeles-Long Beach harbor area. It, too, went over a billion

dollars—up a strong 23 pct. Japan is its biggest customer with \$212 million in goods. Iron and steel scrap and machinery for construction, mining, and excavation rank way high.

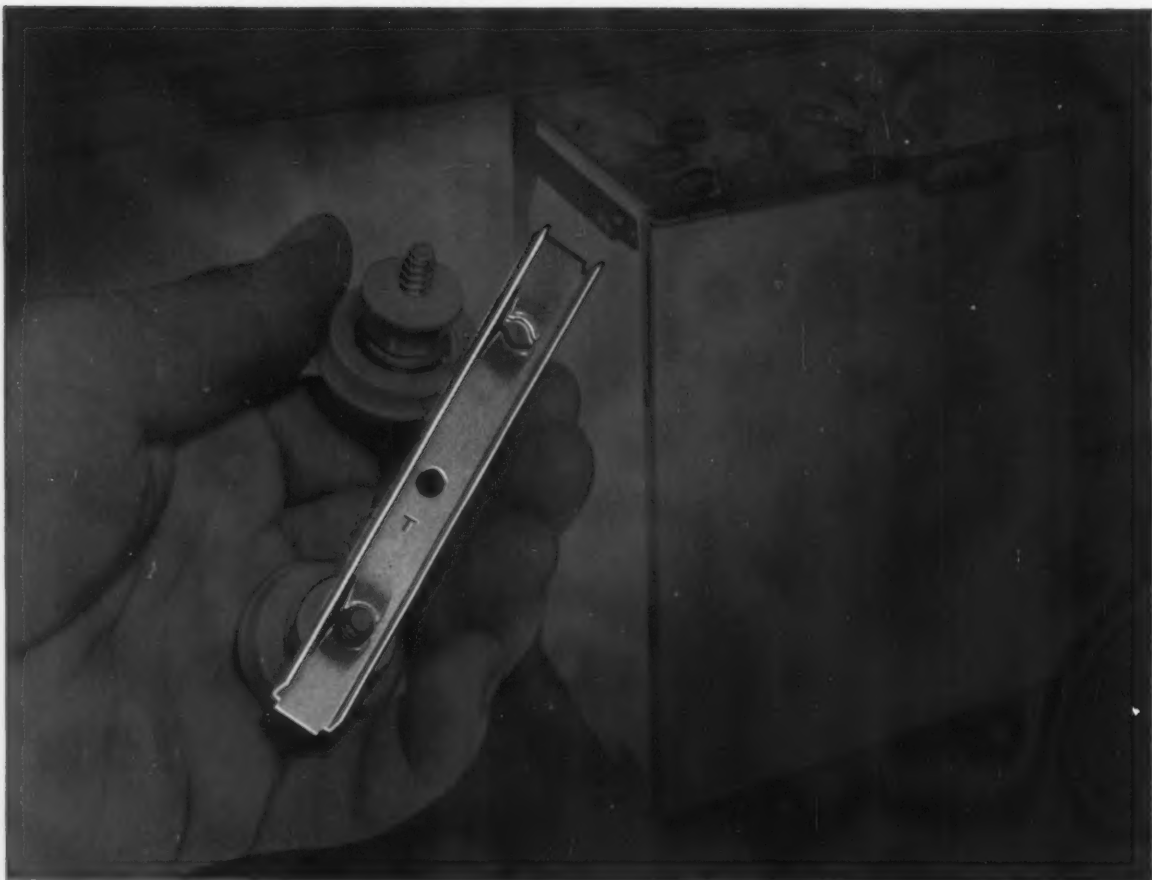
Slower in the North—In the Pacific Northwest, foreign trade is growing steadily, but not so fast as it should. The region moved \$783 million worth of goods through Washington and Oregon wharves last year.

However, it's not all a happy picture. Growth of international commerce hasn't been as great as expected.

Not Following Pattern—Pointing out that the economy of Washington has followed the growth pattern of the U. S. as a whole, the Chamber says, "This is not true of the foreign trade of Washington. At one time this activity also followed national patterns, but in more recent years there has been a lag."



FUELING GET TOGETHER: Convair test pilot maneuvers B-58 Hustler bomber for first mid-air tanker refueling.



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General Electric's dishwasher production goes faster and assembly costs are reduced by the easy-to-apply feature of the simplified SPEED NUT part. The difference in weight even makes an important reduction in freight costs on each carload shipment of dishwashers.

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Metal Cutting Sales Hit New Low

Industry Still Bumps Along Bottom of Recession

It looks like tool builders have long, hard pull ahead before full recovery.

Government tax policies; heavy sales in 1955-56-57 could retard industry comeback. — By E. J. Egan, Jr.

■ The machine tool industry's new order bucket is still bumping around the bottom of an almost dry well. August's net new orders for metal cutting machines touched a new low for the year to date.

A \$19 million total for the month, estimated by the National Machine Tool Builder's Assn., is a shade under the previous low of \$19.3 million booked last January. By way of added contrast, the August, 1957, figure was \$44.5 million.

A Long, Hard Pull—Some builders and a few industry "observers" pin the sluggish August showing on the handy excuse that it was a "vacation month." If true, how do you account for the \$9.1 million of net new orders booked for forming-type machines in the same period? It was the best month of the year so far for this segment of the industry.

For what it's worth, some builders feel the fourth quarter will see the whole machine tool business around the last corner of a naggingly bitter private recession.

The Tax Bugaboo—But other machine makers are not so hopeful. They foresee two factors combining to choke off any sudden, near-term upswing. One is Uncle Sam's tax policies with regard to capital-equipment depreciation. They're still tough enough to dampen the spirit of even the most enthusiastic

would-be buyers, these builders say.

The other factor concerns the host of new machines which were sold in 1955-56-57.

Slow Recovery Seen—Barring the nation's involvement in a shooting war that would trigger a rush of business, machine tool sales will probably recover very slowly from present levels. A few builders say the next big boom won't come until numerically controlled machines take over from the operator-guided models.

One machine tool executive doesn't think a completely efficient relationship of automation to people

will occur in our lifetime. He's Chester S. Johns, sales manager of Buhr Machine Tool Co., Ann Arbor, Mich.

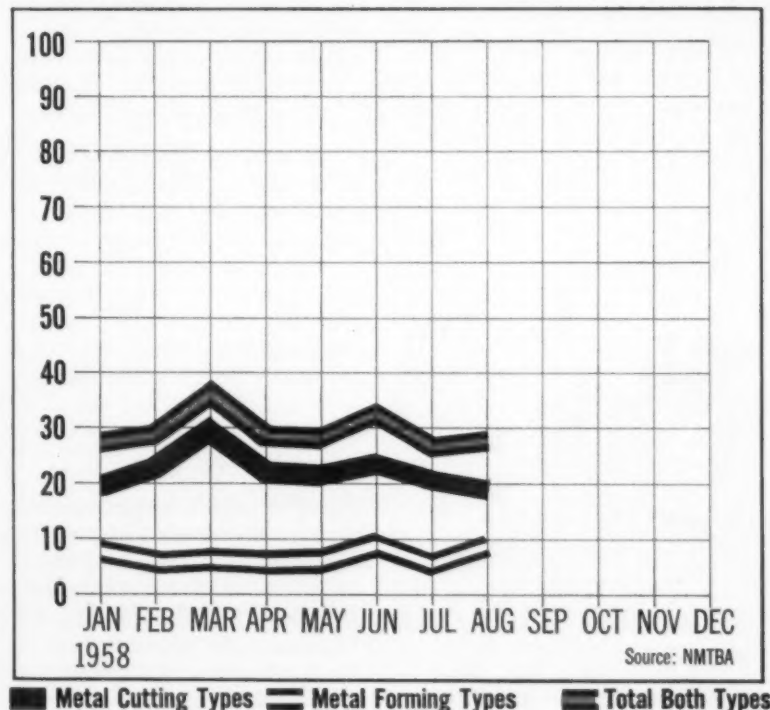
"Frustrating Future"—The consumer won't have any trouble adjusting to the prices and better quality of automation-made products, Johns says. But workers will fight any effort to switch them from high-pay machine operator status to low-pay brackets as automation trainees. Management, too, will have to alter many of its present-day views.

For these reasons, he says, "we can all look forward to a very frustrating future."

MACHINE TOOLS-NET NEW ORDERS

In Millions of Dollars

Metal Cutting and Forming Types



INDUSTRIAL BRIEFS

Philly Furnace Maker—A new company known as Bickley Furnaces, Inc., has been formed by G. Bickley Remmey, former vice president of Richard C. Remmey Son Co., subsidiary of A. P. Green Fire Brick Co. Located at 3000 Hedley St., Philadelphia, the firm will design and manufacture high-temperature furnaces.

Diamond's New Setting—Diamond Alkali Co., Cleveland, producers of industrial and agricultural chemicals, is planning to build a multi-million-dollar campus-style research center. It will be located on an 800-acre site in Concord Township, O., a few miles south of the company's Painesville Plant and research unit at Fairport.

Attention Midwest Buyers—Ammonium sulfate in granular form will be marketed by U. S. Steel Corp. in certain areas of the midwest this fall. New product has become available as the result of the installation of facilities for its production at the coal chemical recovery plant of U. S. Steel's Gary Steel Works, Gary, Ind.

Yankee Service Center—Universal-Cyclops Steel Corp., Pittsburgh, has opened its new Specialty Steel Service Center in Worcester, Mass. It is located at 15 Sagamore Rd.



"We try to make these things as painless as possible."

Joist Guide Ready—Combined specifications and load tables approved by the Steel Joist Institute for all open web steel joists for which standards have been adopted by the Steel Joist Institute have just been published. Copies can be obtained from the Institute, DuPont Circle Bldg., Washington, D. C.

Ore on the Move—Hewitt-Robins, Inc., Stamford, Conn., has an order for more than \$700,000 for the design and manufacture of a conveyor system to be installed at a new iron ore shipping terminal being built by Pan-American Commodities, South America, at Suñ Juan, Peru, a port on the Pacific Ocean.

Atoms Go to School—Westinghouse Educational Foundation has donated \$7,500 to Virginia Polytechnic Institute towards the purchase and installation of a large nuclear reactor facility especially designed for training and research.

Castings Contract—The Beryllium Corp., Reading, Pa., has received a research and development contract from the Air Force, authorized by the Air Materiel Command, Wright-Patterson Field, O. The firm is to conduct a broad program attempting to develop a commercially feasible procedure for producing ductile castings of beryllium metal.

Missile Age Relative—Standard Steel Corp., Los Angeles, has opened new manufacturing and engineering facilities for alloy fabrication, costing about \$500,000. The new plant, known as its Cryogenics Div. will fabricate high "vacuum-bottle-type" low temperature rocket-fuel tanks for the missile industry. This facility is located across the street from Standard's main plant in Los Angeles.

Fall Meeting—Irving Lipkowitz of Reynolds Metals Co., and Jean Vuillequez of American Metal Climax, Inc., will be the principal speakers at the Metal Meeting, Oct. 11, during the National Assn. of Waste Material Dealers' Fall Convention in Atlantic City.

Stainless Gateway—Pittsburgh will have a new stainless steel skyscraper. It will contain nearly 1/2 million lbs of stainless steel alone. The \$16 million Gateway Bldg. No. 4 will contain 400,000 sq ft of rentable space.

Wire for the Road—Production of high-strength, stress-relieved, 7-wire strand for use in pre-stressed concrete construction has now been started at the Sparrows Point plant of Bethlehem Steel Co. The mill is located for shipments to every part of the country, including the Pacific Coast, and for export shipments.

Clean Sweep—U. S. Steel Corp., Pittsburgh, continuing its efforts to find means to control dust particles emitted from openhearth stacks, will install a full-scale wet gas scrubber on one of the openhearth furnaces at Edgar Thomson Works, Braddock, following extensive experimental research with small models.

New Veep for AISC—Wallace R. Harper has been named asst. executive vice president of the American Institute of Steel Construction. He is a former vice president of Pittsburgh Plate Glass Co. The Institute, which is a national association, represents the structural steel fabricating industry.

Silence, Jet Testing—Construction of a \$475,000 building to house jet engine test cells has begun at the San Francisco Maintenance Base of United Air Lines as part of the company's expansion program in preparation for jet transport operations. Over \$100,000 worth of newly developed sound-insulating material will be used in the reinforced concrete structure.

Hundred Ton Haulers—Six hundred modern ore cars—each capable of carrying nearly 100 tons—are being placed in service carrying iron ore from Kaiser Steel's Eagle Mountain, Calif., mine to its steel mill at Fontana, a 164 mile haul. Conventional cars heretofore used in handling the ore could only load about 65 tons.



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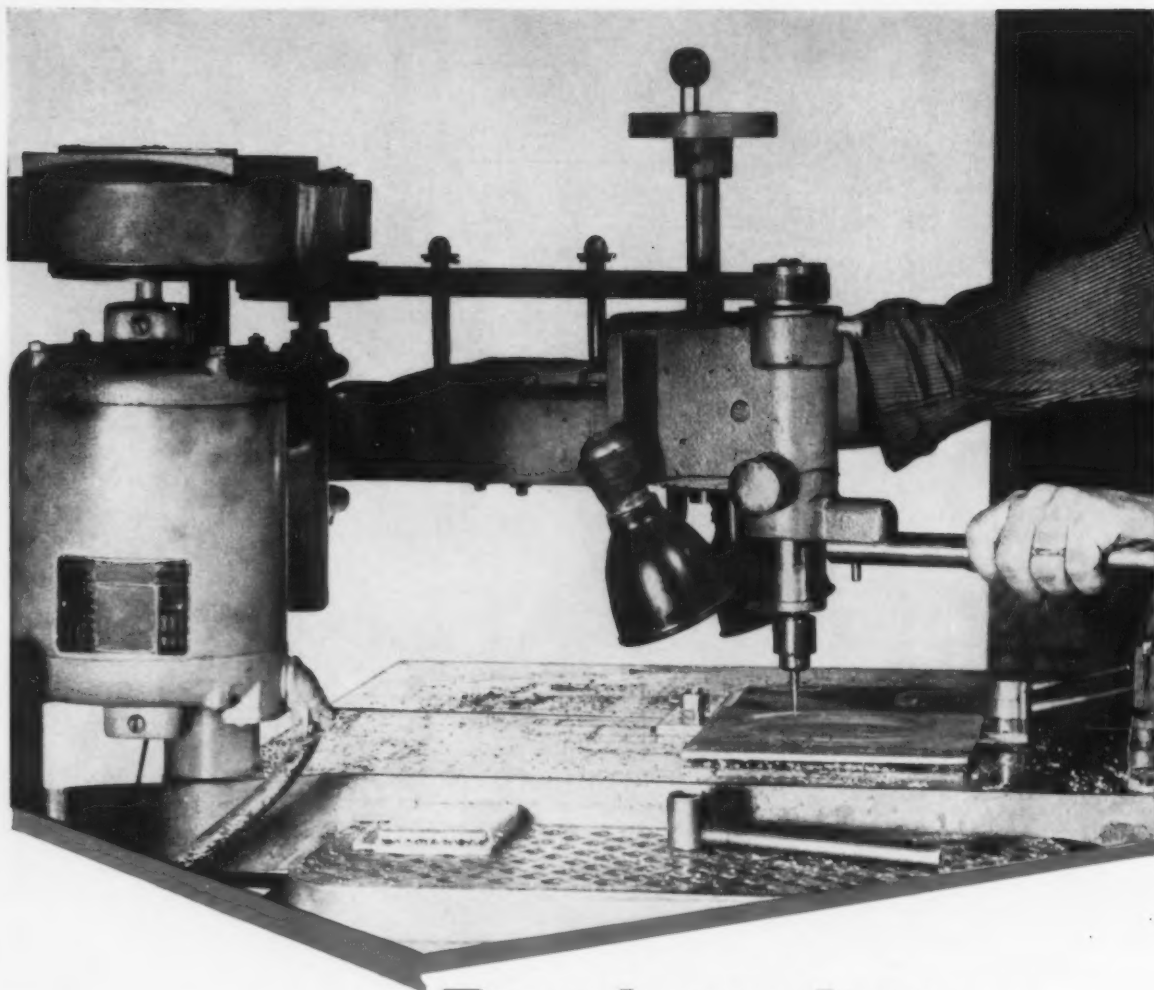


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Our customer is located in Mansfield, Ohio, and at 10 a.m. on a Sunday the spindle was placed on a bus headed for Cleveland. The Bearings, Inc. Spindle Repair Department in Cleveland met the bus and work began immediately to bring this spindle back to its original accuracy and operating

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G. B. Brown, appointed vice president, Mallory-Sharon Metals Corp., Niles, O.

R. L. Rachor, elected president, Edward A. Lynch Machinery Co., Inc.; **E. A. Lynch**, becomes vice president.

J. C. Hydrick, named vice president and general manager, Disston Div., H. K. Porter Co., Inc., Philadelphia.

E. F. March, appointed vice president, finance, Midland-Ross Corp., Cleveland; **C. W. Elliott**, named vice president, administrative; **S. W. Fletcher**, elected vice chairman of the board.

V. T. Johnson, appointed vice president and director, marketing, Bristol Laboratories, Inc., New York.



J. N. Kemple, named general manager, Page Steel & Wire Div., American Chain & Cable Co., Inc., Monessen, Pa.

E. W. Engle, named manager, mineral industry products, Kennametal Inc., Latrobe, Pa.

F. W. Schreiner, named district manager, Cleveland office, Pratt & Whitney Co., Inc., W. Hartford, Conn.

W. A. Penner, appointed district office manager, Worthington Corp.'s Denver District office.

E. A. Smith, Jr., promoted to manager, development engineering, The Beryllium Corp., Reading, Pa.

Dr. H. P. Munger, named head, Metallurgical Div., Republic Steel Corp.'s new Research Center in Independence, O.



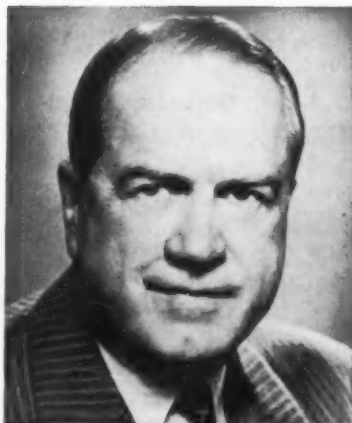
R. M. Fellows, elected chairman of the board, The Fellows Gear Shaper Co., Springfield, Vt.

J. P. Strand, named division superintendent, titanium, Crucible Steel Co.'s Midland (Pa.) Works.

R. J. Green, named manager, direct accounts, Piston Ring and Seal Dept., Koppers Co., Inc., Baltimore, Md.

F. J. Anderson, promoted to district manager, Chase Brass & Copper Co. office in Seattle, Wash.

S. N. Craig, appointed chief engineer, Orr & Sembower, Inc., Reading, Pa.



N. E. Keeler, appointed vice president and treasurer, Acme Steel Co., Chicago.

R. W. Brady, appointed district manager, Northeastern area, Disston Div., H. K. Porter Co., Inc., Philadelphia.

R. A. Vanina, appointed asst. division manager, sales, Electro Dynamic Div., General Dynamics Corp., Bayonne, N. J.

Lawrence Wilkinson, named executive vice president, finance and administration, Continental Can Co., New York; **C. B. Stauffacher**, becomes executive vice president, Robert Gair Paper Products Group;



L. A. Reinhardt, promoted to vice president and controller, Industrial Brownhoist Corp., Bay City, Mich.

W. M. Cameron, named executive vice president, glass and plastics operations; **E. L. Hazard**, named vice president, Central Metal Div.

J. R. McReynolds, named asst. district traffic manager, The Youngstown Sheet & Tube Co., Youngstown, O.

A. W. Ostrander, elected vice president, sales, General Metals Corp.

R. L. Jaeschke, appointed chief engineer, Dynamatic Div., Eaton Mfg. Co., Kenosha, Wis.

G. F. Clifford, appointed acting manager, Spinco Div., Beckman Instruments, Inc., Palo Alto, Calif.

H. R. Colwell, appointed marketing administrative manager, National Can Corp.

Reece Hatchitt, appointed director, international operations, Cummins Engine Co., Inc., Columbus, Ind.

M. B. Mairs, appointed product manager, Minerals Dressing Dept., Mining and Construction Div., Joy Mfg. Co., Pittsburgh.

C. F. Krehbiel, appointed Western sales manager, Ainsworth-Precision Castings Co., Detroit.

Seymour Becker, appointed field representative, New England states, Arcair Co., Lancaster, Ohio.

D. E. Erskine, elected asst. controller, The Glidden Co., Cleveland.



Dr. W. L. Fink, promoted scientific coordinator, Alcoa Research Laboratories, New Kensington, Pa.

S. C. Seekell, has rejoined Wolverine Tube, Div. of Calumet & Hecla, Inc., as sales representative in Grand Rapids and Western Michigan.

E. H. Elliott, appointed industrial sales representative, Philadelphia area, Warren Pumps, Inc., Warren, Mass.

H. L. Huntsinger, appointed Indiana and Ohio sales representative, Electrical Contacts Div., Judson L. Thomson Mfg. Co., Waltham, Mass.

C. L. Fredley, named staff industrial engineer, Jones & Laughlin Steel Corp., Pittsburgh.

R. B. Dozier, appointed export sales administrator, International Div., Beckman Instruments, Inc.



H. Y. Hunsicker, appointed chief, Alcoa Research Laboratories' Physical Metallurgy Div.

Jack Ellsworth, named Eastern sales engineer, New York headquarters, Cleaver-Brooks Special Products, Inc., Waukesha, Wis.

C. W. Schott, appointed development engineer, technical development, Crucible Steel Co. of America, Pittsburgh.

F. P. Szamier, appointed chief inspector, Hydreco Div., The New York Air Brake Co., Kalamazoo, Mich.

P. S. Landis, appointed manager, production planning, Pittsburgh Works, Jones & Laughlin Steel Corp.

W. H. Chaffee, appointed director of procurement, American Radiator & Standard Sanitary Corp.



J. A. Nock, Jr., will become chief, Fabricating Metallurgy Div., Alcoa Research Laboratories.



Frank Ross, named vice president, sales, E. F. Houghton & Co., Philadelphia.



P. C. Vetter, appointed vice president, engineering, Great Lakes Steel Corp.

NEW! ULTRA-MODERN 45-TON OBI

added to Niagara's exclusive front-to-back crankshaft series

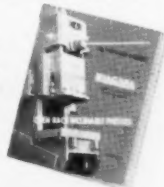
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... a brand new addition to industry's most advanced line of OBI's! Years ahead of any press within its range, this 45-ton newcomer is available plain or geared. The front-to-back arrangement of its 3½" crankshaft is, of course, a distinguishing mark of Niagara's famous Series E.

No other OBI press design has been so widely acclaimed. And no wonder ... for no other OBI boasts so many unique advantages:

Full support to wide dies. Greater resistance to off-center loading. Accurate alignment of slide with minimized tendency to cock. Crankshaft deflection minimized. Substantially increased die life. Smoother, safer performance. Exposed overhanging gears, flywheel and other mechanisms eliminated. Less floor space.

GET THE FULL STORY on this new 45-ton wonder-worker as well as the 4 other sizes in the Series E family (up thru 200-ton capacities, and 7½" shaft diameters, standard and automated models). Write for illustrated Bulletin 56.



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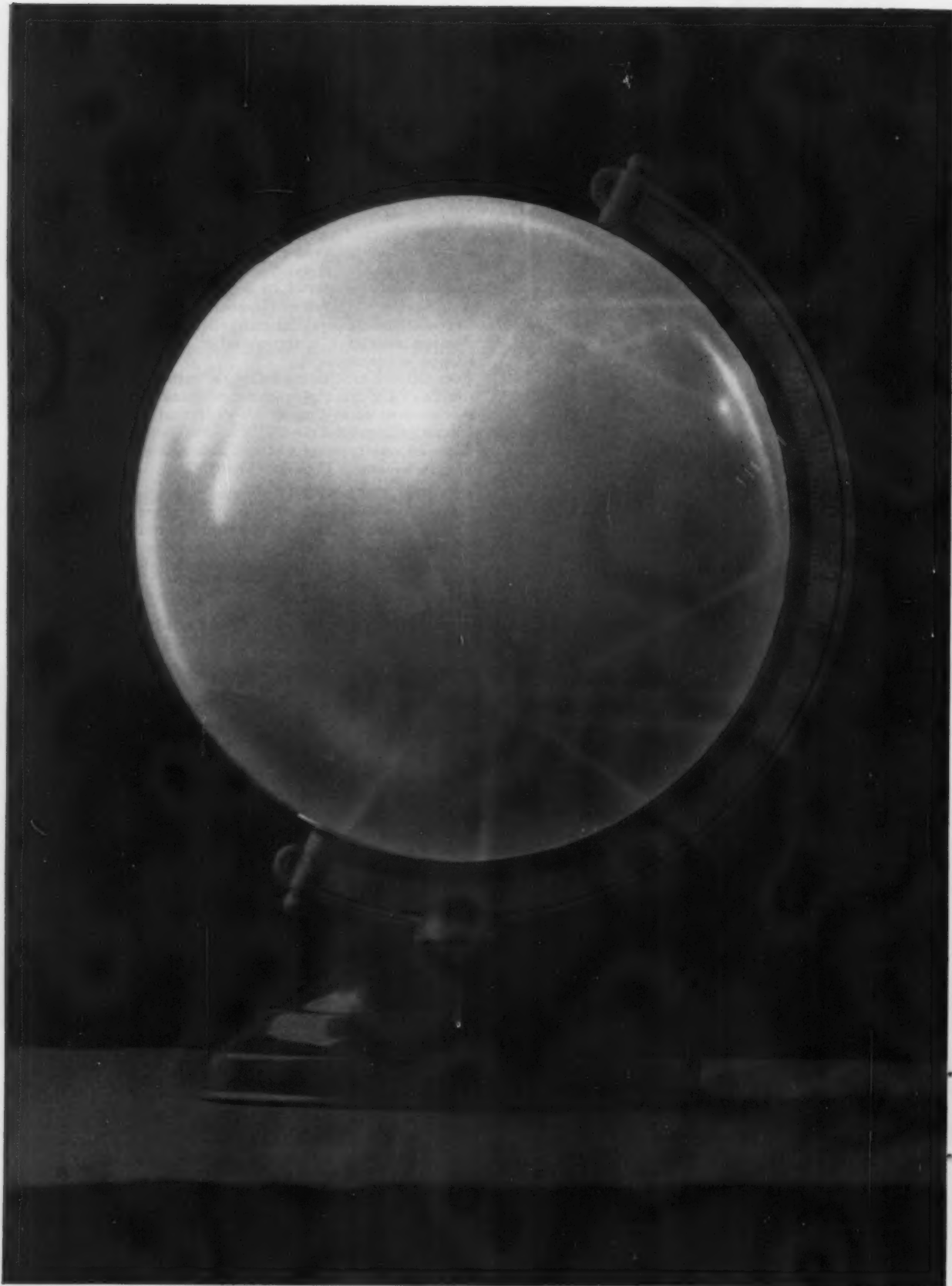
SCAN THESE COST CUTTING PRODUCTION BOOSTING FEATURES:

- Rigid crankshaft with close coupled main bearings each side of crank pin.
- Widest spaced OBI gibbing (L to R) in the industry permits wider box section slide to rigidly support a greater slide face area of full JIC dimensions. Guiding of slide is closer to point of die operation because there is no flange interference with gibbing.
- Longest gibbing in the industry, exclusive multiple "V" type, provides the most efficient guiding and accurate alignment of slide for greatest die life.
- Fully concealed, yet readily accessible, driving mechanism.
- Enclosed, rigidly supported gearing operates in sealed oil bath.
- Low inertia, pneumatic friction clutch and brake operate directly on crankshaft — the slowest rotating shaft.
- Precision, hardened, longer-wearing steel gears.
- Rigid, compact all-steel, box type frame.
- Power slide adjustment and power inclining device operate with new, unequalled speed.

NIAGARA

OBI PRESSES SERIES E

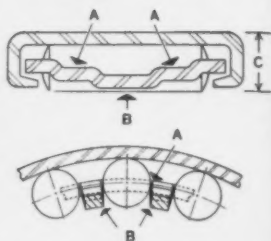
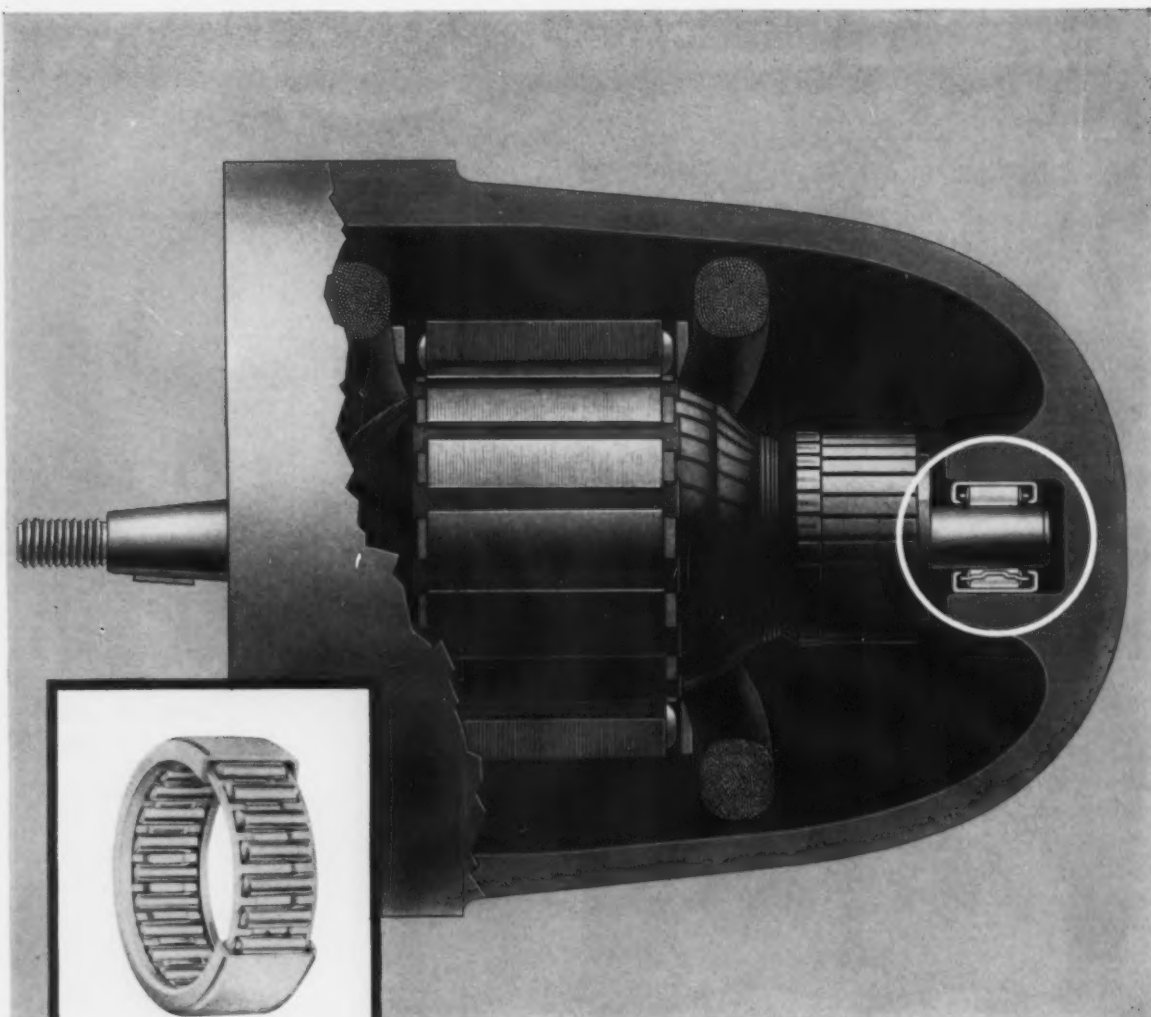
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- high capacity in small cross section (C)
- long pregreased life
- efficient at high speeds
- mounted by press fit
- simple housing design
- low unit cost

Save up to 50% on armature bearing costs!

Low unit cost of the new Torrington Drawn Cup Roller Bearing reduces armature bearing cost as much as 50%. This unique bearing gives excellent service at high speed and permits prelubrication for life.

Test installations and service applications show the bearing performs efficiently at speeds up to 25,000 rpm in intermittent service of 1000 hours and more. In such service, initial lubricant lasts the life of the motor. Most applications require no seals. This, with the simplicity of housing design, contributes further to economy.

Designers are invited to evaluate the Torrington Drawn Cup Roller Bearing for such applications as generators, power tools, electric mixers, vacuum cleaners and other appliance motors where considerations of cost, speed, efficiency and light weight are paramount.

Services of Torrington's engineering staff are offered to assist you in design developments of every type of electric motor. **The Torrington Company, Torrington, Conn.—and South Bend 21, Ind.**

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Make Automatic Handling Pay

Gravity Transfer Units Link Standard Machine Tools

When and where does automatic handling pay?

Can you link it with your standard machines, or must everything be bought special?

You can integrate your general-purpose tools. But study your operations carefully.

By R. H. Eshelman—
Engineering Editor

■ It's easy to overlook simple ways to mechanize, ways that are better suited to the majority of manufacturing operations.

For many smaller, uniform-type parts you can readily tie in automatic handling with standard machines. Your key is gravity transfer of parts from one to another. To do it should cost you only 20 to 30 pct over the cost of the basic machines, depending on how far you've tooled present processes.

An advanced system is one just installed to process stamped gear blanks at Detroit Transmission Div., General Motors Corp. Engineering the handling equipment and integrating the system was a joint project with the supplier, the F. Jos. Lamb Co., Detroit.

R. R. Jensen, Detroit Transmission's master mechanic, says, "What has happened here is that we have taken our own machines, retooled them, and applied automatic loading and unloading. We merely connected the handling systems from machine to machine."

Gets Head Start—The installation shows many of the typical gains you can expect from this approach. For instance, the machine tools are standard units. Most of them were



LINE FORMS HERE: From bulk supply (rear), gear blanks feed to shaker table, then drop into rolling position in chute (foreground).

already on hand. Moreover, many of them were already tooled up for automatic feeding and machining of screw-machined gear blanks.

In setting up to process the stamped blanks, manufacturing admittedly was somewhat ahead with

all this amortized tooling. "This may have made it possible to go further toward better handling," plant engineer E. G. Lommel acknowledges, "but many shops of varied production could also upgrade by progressively tying groups

of machines into integrated units."

Handles Other Designs—Detroit Transmission's gear line also stresses flexibility. Most of the equipment can be modified quickly to accommodate part changes. For if mass production is one of the automotive industry's major features, so is the frequency with which design changes occur. Just as styling varies from year to year, so do new designs for engines, transmissions, and other basic assemblies.

In effect, the integrated setup pipes work in and out of some 17 machines according to the process engineer's wishes. Operations include chamfering the blank, grinding, broaching, turning, drilling and reaming, finish grinding, hobbing, deburring, gaging, and gear shaving.

Simple Elements—A few standard components plus lengths of flexible chuting make up the basic elements of the handling system. One

such unit stores and orients bulk parts and feeds them into the system. Another elevates parts where height is needed for gravity flow. Still another stores banks of parts between operations and meters them out in a balanced flow to various machines.

Line controls start and stop the flow of parts. These relays control machine and equipment functions.

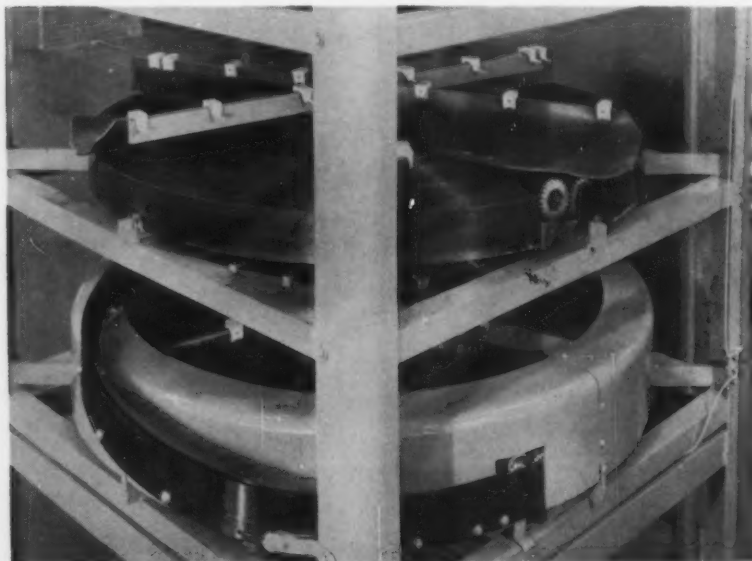
Spiral storage units, feeders, line relays and interlocks work together for simple but effective production control. The number of parts in process is automatically kept within set maximum and minimum figures. Relays keep parts from jamming on their way into machines.

Use Own People—With standard elements, setting up the integrated line was almost as simple as building with an Erector set. Plant engineering developed the machine layout and worked with the master mechanic's department on processing and parts handling.

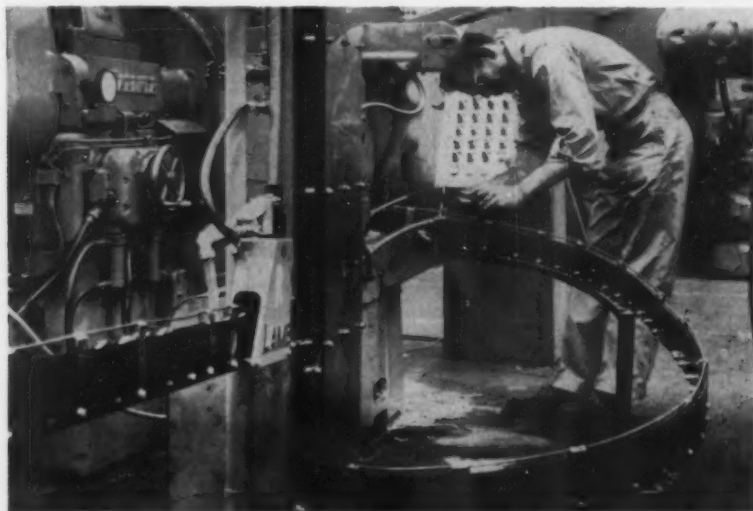
It's impossible to foresee all problems that may arise with this integrated line. But the system's flexibility should help overcome them. There was one instance where engineers found a stamping burr interfering with some fixturing. They solved the problem by adding a double chamfering machine at the start of the line. Chuting was simply rerouted to move parts through this operation.

In another example, broached parts were so heavily coated with cutting oil that they jammed up in the chutes. Punching extra slots in the chute walls cured this by allowing more of the cutting oil to escape.

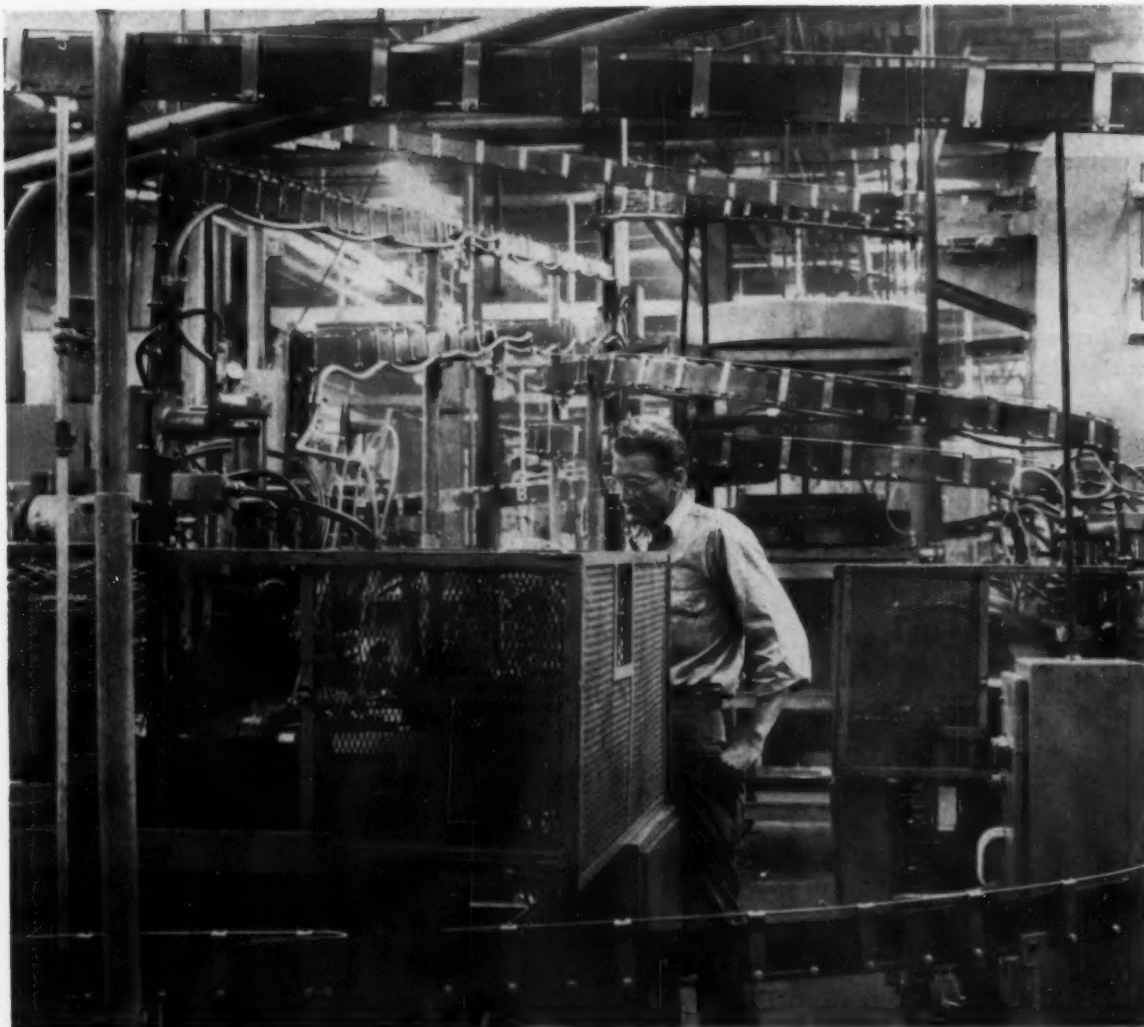
Prevent Locking—Another common problem in gravity flow systems cropped up when hobbled gears seemed to hang in the chute on the flat surfaces of their gear teeth. They also tended to lock at various angles. Engineers fixed this by (1) laminating seven ride rails into the solid chute floor, (2) bringing rail sides in to keep the parts upright,



SPACE SAVER: Typical Lamb spiral storage unit holds parts for two separate processing stages, feeds work out in a steady flow.



QUICK DIVISION: Elevator distributor lifts parts to proper heights, splits the supply for gravity-flow delivery to several machines.



FLEXIBLE CHUTING: Smooth passage of parts from storage units to machine tools depends on proper

gradient and lack of friction in chuting. Bolted, spring steel chutes conform readily to any layout.

(3) adding a vibrator which works periodically to keep parts moving freely.

You have a wide choice in planning how to integrate handling equipment with standard machine tools. Your level of mechanization can be keyed to such vital factors as volume of production, length of runs, funds required, skills available and direct labor costs.

A practical way to improve facilities and cut costs is to start with one area. Process your highest-volume, most stable item with all the automatic handling you can afford. Then continue to upgrade as

experience and new funds permit.

Follows Best Principles — With mechanical handling between processes you'll shorten and streamline work flow. And you get first-in, first-out inventory control. Inventories of work in process are stored at the point of use.

Working inventory and supplies of raw materials can be smaller with integrated handling, since there's less lag from blank to finished part. And because machine operators tend to become machine supervisors, human error is reduced. Machines operate at peaks of efficiency

set by production engineers, rather than at average speeds set by human limitations.

Of course, such gains are not achieved without effort. Good tool design and plant engineering are musts, and process engineers need broad experience. Lacking a background in automatic handling, smaller firms can get good advice from qualified experts.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

Rare Earths Homogenize Ingots

By W. G. Wilson—Metallurgist, Molybdenum Corp. of America, Pittsburgh

Rare earths have been known to improve transverse ductility as well as hot workability.

They also have a marked effect on sulphur in molten steel.

At least part of these benefits are related to ridding the ingot of A-segregation.

■ Two recent Russian articles supply some basic data on the effects of rare earths in iron and steel.

Tageev and Smirnov¹ report that 1 to 4 lb per ton of misch metal, when added to 0.36-0.42 pct C steel, which in all cases except one have about 1.10 pct Ni, would eliminate A-segregation almost in proportion to the amounts of rare earths added.

They found that about 1 lb per ton would weaken A-segregation (sometimes called inverted-V segregation), but that 2 to 4 lb were needed to fully eliminate it.

Keyed to Sulphur—The mechanism, as proposed by the Russian metallurgists, was through formation of a high melting point sul-

phide constituent. This seemed to precipitate in the arms of the dendrite at a relatively early stage of solidification.

In untreated ingots the sulphur seemed to stay in solution for a longer time, giving it more chance to segregate into dendrite boundaries. Sulphur was precipitated at higher temperatures in the treated ingots; thus, it wasn't available for segregation at the liquid-solid interface, which seems to be essential for the production of A-segregation.

Precipitation of sulphur within the arms of the dendrites also had a beneficial effect on other precipitates. Removing sulphur from solution seemed to increase the melting point of other inclusions. Therefore, the elimination of sulphur from the system is more of a compounding one rather than being a straightforward effect.

Confirmed Here — The effect of rare earths on melting points of sulphides has been confirmed in tests conducted by one of our consultants. In these experiments, iron sulphide mixtures containing 5 to 50 pct rare earths were prepared. Metallic rare earths were used in one case and rare earth oxides in another. Materials were placed in a ceramic boat, heated, and their melting points observed.

The data showed that these amounts of rare earths, when mixed with iron sulphide, raised melting points anywhere from 30° to 270°F. Results are summarized in the table.

About a year ago, Armour Research Foundation² reported on the effect of rare earths on transverse properties. Their results show that misch metal definitely improved transverse ductility of constructional alloy steels. The elimination of A-segregate discussed in the

Russian paper may well explain the improved transverse properties obtained in the work at Armour.

Same On Large Heats—Similar results have been obtained in two commercial-size heats of steel. The heats were made in an electric furnace by Republic Steel Corp. of a grade with nickel, chrome, molybdenum and about 0.40 pct C. In these experiments it was also concluded that rare earths helped improve transverse ductility.

Half of a commercial-size heat was poured into ingot molds. Then a cage containing 3 lb per ton of one of the rare earth compounds was plunged into the remaining metal. Tests run on both halves of this heat showed the rare earths had improved transverse ductility. There was, however, a fading effect on the tail end of the heat; the cause of it is yet to be found.

Results Vary — The experiment was repeated on blooms of SAE 8620, originally press forged to about 16-in. squares and then rolled to about 6 x 6 in. No improvement in transverse properties was noted, although the same technique was used in treating half the heat to get before-and-after comparison.

There was, of course, the added variable of primary reduction by pressing on the second set of ingots. This has a great effect on the entire ingot structure, and may have had a lot to do with the outcome.

Note Skin Effect—The Russians found that rare earth treatment seems to make the ingot skin more homogenous, but that sulphide precipitations directly behind the skin seemed to be larger. This improved skin structure may in part account for the better hot workability misch metal develops in stainless steel.

Effect of Rare Earths On Melting Point

Composition	Melting Point, °F
FeS (Lot 550204).....	1940-1985
FeS + 5 pct misch metal*.....	1920
FeS + 10 pct misch metal.....	1960-1980
FeS + 20 pct misch metal.....	2115
FeS + 5 pct rare earth oxides.....	1990
FeS + 10 pct rare earth oxides.....	2015
FeS + 20 pct rare earth oxides.....	2020
FeS + 50 pct rare earth oxides.....	2230

* a rare-earth alloy containing about 50 pct Ce and 50 pct La, Nd or similar elements.

Baukloh and Meierling³ found a wide discrepancy in results when they added from 0.25 to 2.0 pct Ce in cast irons of comparable analysis. In the first of a series of three heats the base sulphur was 0.132 pct. By adding 2.0 pct Ce they obtained 0.092 pct S and 0.195 Ce.

In the third heat, they added 2.0 pct misch metal. Sulphur went from 0.121 to 0.010 pct and there was 1.50 pct Ce. In both series the misch metal was put on the bottom of the ladle and the iron was tapped on it. They were at a loss to explain the differences produced by rare earths.

Affects Fluidity — This paper shows that cerium in amounts as small as 0.25 pct will give almost 30 pct greater fluidity. Larger additions of cerium then reduce fluidity. And when additions were on the order of 1.0 to 1.50 pct, fluidity was lower than that of the base iron.

Further, if the iron is allowed to set before pouring for as little as three minutes, the fluidity begins to fall rapidly. At the end of seven minutes fluidity decreases to about one-third that obtained when the metal is cast right after misch metal treatment.

Their explanation for these phenomena have to do with what they call emulsions of cerium oxide which form through oxidation of the relatively large amounts of misch metal added. This high melting point oxide, they feel, materially lowers the iron's fluidity.

Seek Ferroalloy—Another facet of this report involves attempts to make a ferrocerium alloy from cheap raw materials. The Russians first tamped a cerium oxide lining in an induction furnace. High carbon iron was then melted onto this lining. At 1450°C they obtained about 2.50 pct Ce in the iron.

No mention is made of the time needed for this amount of reduction. But they do state they felt that higher temperatures would give still higher cerium contents.



SOURCE OF TROUBLE: A-segregation is visible in this sulphur print of a vertical section through an ingot of 0.20 pct C aluminum-killed steel. Russian metallurgists show rare-earth additions eliminate it.

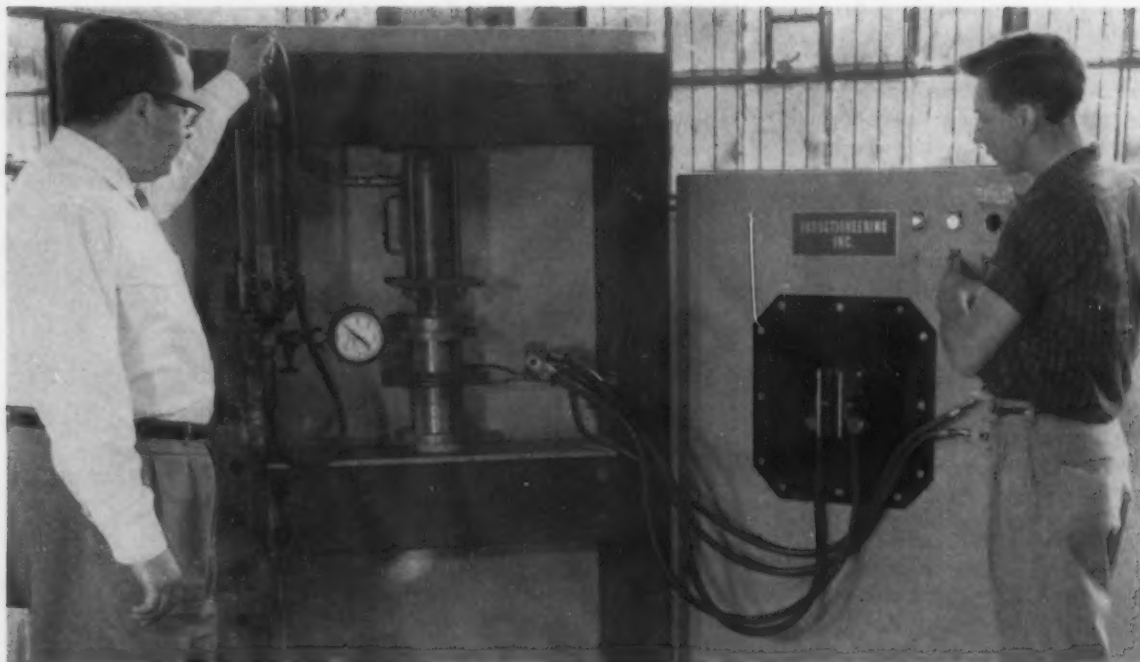
Their theory on the influence of misch metal on fluidity of cast iron doesn't jibe with results of the latter experiment.

References

¹V. M. Tageev and Yu. D. Smirnov, "Prevention of A-Segregation in the Solidification of Steel by Treatment with Rare Earth Elements," Brucher Translation #4060.

²H. Schwartzbart and J. P. Sheehan, "Better Transverse Strengths—Rare Earths Improve Impact Properties of 4330," *The IRON AGE*, May 26, 1955.

³W. Baukloh and H. Meierling, "The Effect of Cerium on Cast Iron," Brucher Translation #1433. The author thanks Henry Brucher, Altadena, Calif., for permission to use his copyrighted translations of the original Russian articles.



FAST BOND: Large bearings of powder metal are made by silver soldering two flanged ends to a center

section. Bonding is done with 0.010-in. strip solder, using controlled pressure and temperature.

Boost Powder Metal Part Size

Join Sections With Silver Solder

By **R. H. Weichsel**—Apex Bearings Co., Hudson, O., and **E. T. Johnson**, Amplex Div., Chrysler Corp., Detroit

Research has knocked the size limits off of powder metal parts.

No, you don't need bigger tooling or bigger presses. You just bond any number of pieces with silver solder.

■ The size of powder metal parts has long been limited by tooling and press capacities. Recently, however, a practical method for bonding such parts was developed by Apex Bearings Co. and Chrysler Corp.'s Amplex Div. This means that much larger ferrous and non-ferrous parts are now feasible. Also, intricate shapes that could not be considered before, can now be built this way.

The bonding process uses silver solder. It produces permanent joints with tensile strengths matching those of the parent materials. And there appear to be few limitations to the process. Any number of parts can be joined.

Bearings First—Discovery of the bonding technique followed a search for ways to use Oilite bearings in steel mills. Mill bearings are big, and frequently as long as they are round. Although the largest press available could make powdered bearings up to 18 in. in diam on a production basis, tooling limitations held length to 6½ in.

The length problem couldn't be solved simply by putting standard

length bearings end-to-end in a housing or by bolting bearing sections together. Such answers weren't good enough. Mill bearings must run with minimum maintenance until virtually worn through. Downtime is very costly.

Try Solder—Researchers then thought of using silver solder as a bonding agent. Their goal was a bonded joint that would: (1) be almost imperceptibly thick, (2) have a tensile strength matching the parent material, (3) possess good bearing qualities.

First Attempts—Using a hand torch for a heat source—were discouraging. Occasionally a good

joint showed up; usually not. By studying the microstructure of the joints, researchers found what was happening.

Using approved techniques, they had made the interfaces of the parts to be joined so smooth that they stuck together by capillary attraction. Then they tried to apply the silver solder in its most liquid state. Result: the porous powder metal soaked up the solder as soon as it hit the joint area.

Try Graphite Dam—They then tried colloidal graphite—hoping it would act as a dam to keep the liquid solder from spreading. But this wouldn't work. They finally decided to kill the heat the instant the solder reached its melting point. This worked. The solder stayed at the joint area. Virtually none of it was dispersed or lost.

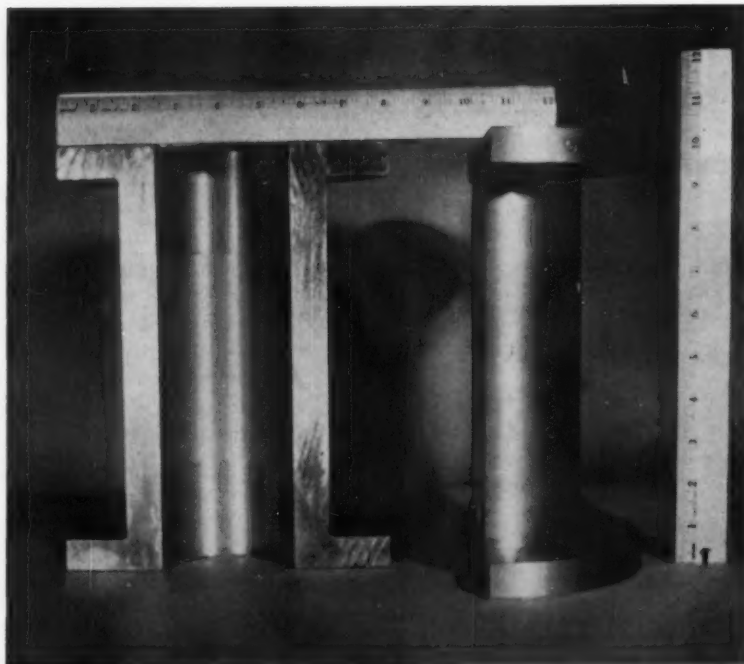
Present use of induction heating and 0.010 in. strip solder yields a joint with virtually metal-to-metal contact, with about 0.0005 in. penetration on each side. However, both pressure and temperature must be carefully controlled for the range of bearing materials and silver solders that are used.

Researchers see no reason why the technique can't be used on other types of powder metal parts. It's being patented, and work will go to broaden its uses.

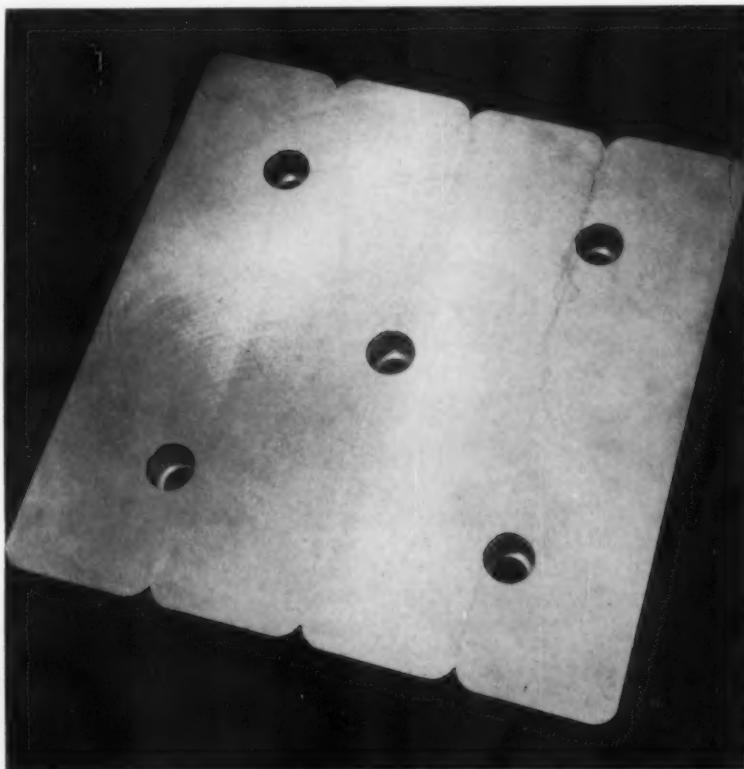
Present Uses—One of the first production jobs bonded groups of four 2x12 in. powder metal blocks to make bearing wear plates for a wind tunnel.

Another job that couldn't have been tackled previously produced the half bearings for a 40 in. blooming mill runout table. They are 4½ in. ID, 5¾ in. O.D., and 10 in. long. There is a flange on each end. Bearing life is five times greater than with the type used previously.

Getting the lubricant past the solder joint is no problem. It's only necessary to apply lubricant to one side of the joint. The lubricant film between shaft and bearing moves freely past the joint and equalizes automatically.



KING SIZE: Powder metal bearings of this size were not feasible until silver solder process for bonding sections was developed.



FLAT WORK, TOO: Powder metal wear plate for wind tunnel consists of four sections bonded with the silver solder technique.

New Press Sweeps Hot Forging Into the Automation Age

For thousands of years, fine forgings have depended on the skill of a man with hammer and anvil, or tongs and press.

This is no longer true. The first fully-automated forging press has just been unveiled.

■ Another metalworking process, the centuries-old hot forging technique, has just jumped feet first into the automation era. Its springboard: a fully-automated four-station forging press, said to be the world's first.

Designed and built by The Erie Foundry Co., Erie, Pa., the 2500-

ton impression die machine makes 40 strokes per minute, can bang hot blanks into finished and trimmed forgings at the unheard of rate of 2400 per hour. It can handle three or four forging dies and one or two trim dies, depending on the type of forging to be made.

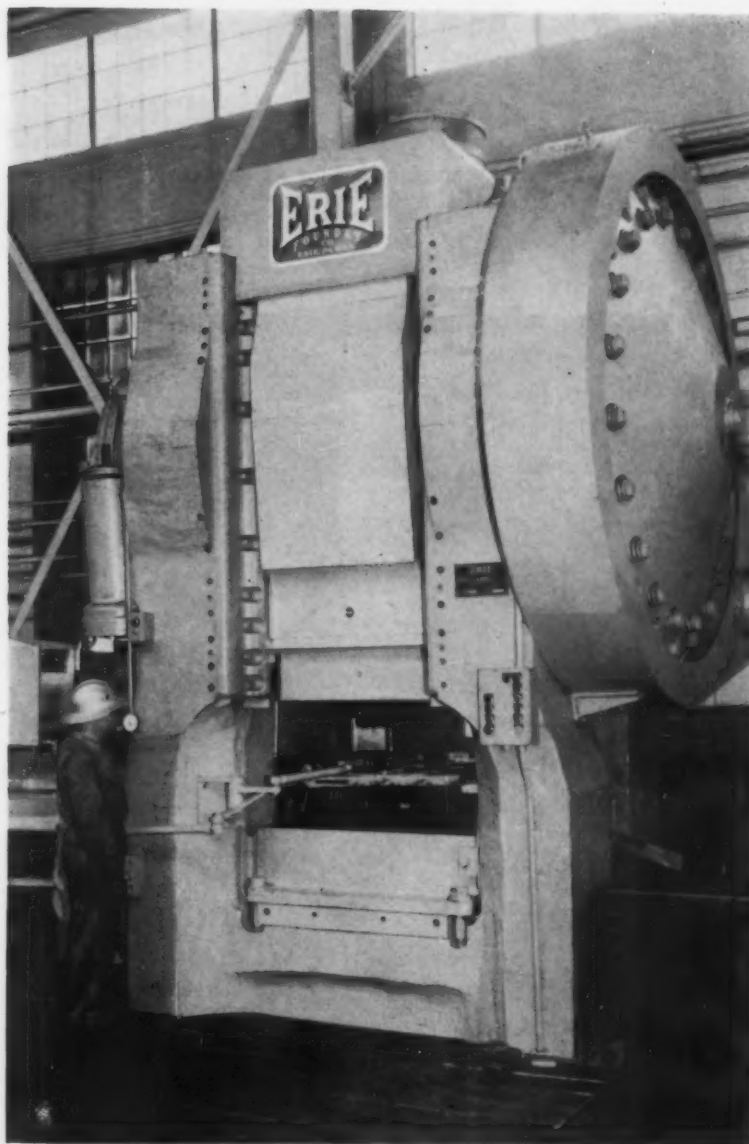
In line with automation's labor saving code, the press is merely attended—not operated—by a single "observer." Run as a straight forging unit only, it will match the output of two or three conventional presses. Each of the latter needs the services of at least two men, a heater and an operator. If trimming is included, the new unit will also dispense with two or three trimming presses and their operators.

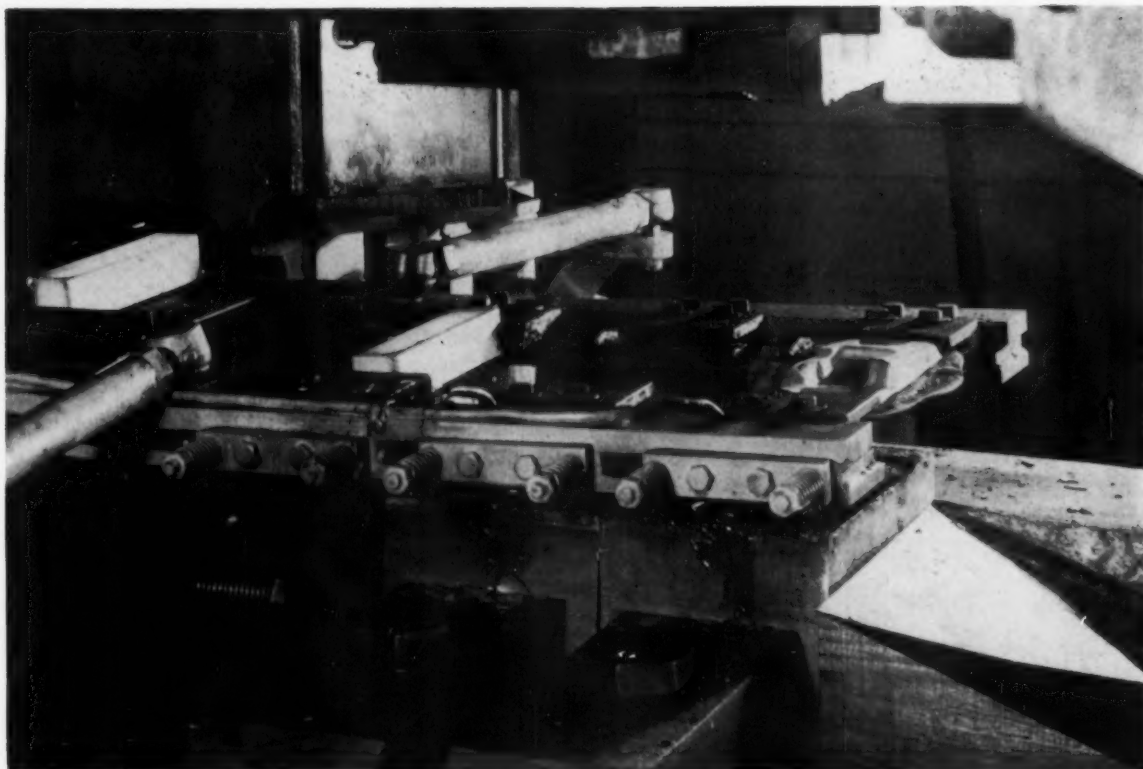
Has Broad Potential—The potential-use area of the automated press spreads right across the die-forging board: connecting rods, gear blanks, gasoline and diesel engine valves, stem pinions, track links, and wheel hubs, to name a few.

Under test for the past year, the press has been forging crawler track links for a major builder of farm equipment. Unveiled for a selected group of viewers recently, it proved its ability to pour out the 7-lb, 4 x 10-in. steel links at a 1200-per-hour rate. Full output potential of 2400 pieces per hour was shaved in half to get longer die life. Even so, before the new press took on this job, the top rate was 275 forgings per hour.

The track link forging operation uses three stations: one to pick up the hot (2000°F) blank, measuring

◀ **STRAIGHT LINE:** Hot blanks move from furnace (left) into 2500-ton automated press. Forgings drop into tote box as "observer" watches.





ONE, TWO, THREE: Pickup station for hot blanks is at the left. Station No. 2 holds semi-forged part.

Finished link is at right. A fourth station, for trimming forgings, may be added at any time.

1½ x 1½ x 8½ in.; a second to semi-forge the part; and a third to finish the link. A fourth station, for trimming, could be added at any time.

All-Automatic Handling — Hot blanks move by conveyor from the furnace through the left window of the press. A pusher positions each one in turn at the pickup station. Here, fingers grip the blank, place it on the first die and then retract.

Next, the upper die comes down to semi-forge the blank. Knockout pins lift the workpiece out of the die so a second set of fingers can move it to the third and final station. There, other knockout pins and fingers work to lift, grip, and carry the finished forging to a chute, where it slides into a tote box.

Grip fingers are mounted on two horizontal arms that extend through the left window of the press. One three-fingered arm operates in back of the die area; a matching arm with three fingers grips workpieces from

in front. All of the finger levers and linkages are clear of the forging space so that dies can be changed or adjusted easily.

Timing Stays True—Press operation is continuous. The automatic feed is chain driven from the eccentric shaft of the press to insure accurate timing. Gripping and transfer motions are also actuated mechanically. Thus timing stays true with respect to press speed. Knockout pins work off a cam on the eccentric shaft.

Erie's design engineers also provided a wide Scotch yoke and extra guiding on the back of the ram. This allows the press to withstand off-center loads and maintain die alignment. Tapered auxiliary guides at the bottom of the stroke improve ram guiding while making it unnecessary to use guide pins.

To provide 8 in. more clearance for manipulating work in the press, engineers spread the front columns and moved the work area forward.

Yet, overall press height is only 11 ft, 3 in. This is three feet less than the height of contemporary machines.

Scotch Yoke Important — The feature mainly responsible for the short-height design is the Scotch yoke. It affords a larger bearing area, increases press rigidity, and eliminates the pitman and ram pin.

Circulating flood lubrication is provided for the main bearings, while the Scotch yoke operates in an oil bath. For reversibility and extra life, the alloy steel main gear and pinion are of herringbone design.

The air-operated, two-plate clutch is mounted on the main shaft, within the main gear. Bearings are mounted behind the clutch plate. The cover, piston, and springs can be removed as a unit, making it easy to inspect the clutch lining.

The brake on the new press is adjustable from the floor

Which Clamps Are Best For Jigs and Fixtures?

By Federico Strasser—Consultant, Santiago, Chile

Fast, accurate machining and assembling at low unit cost calls for good tooling.

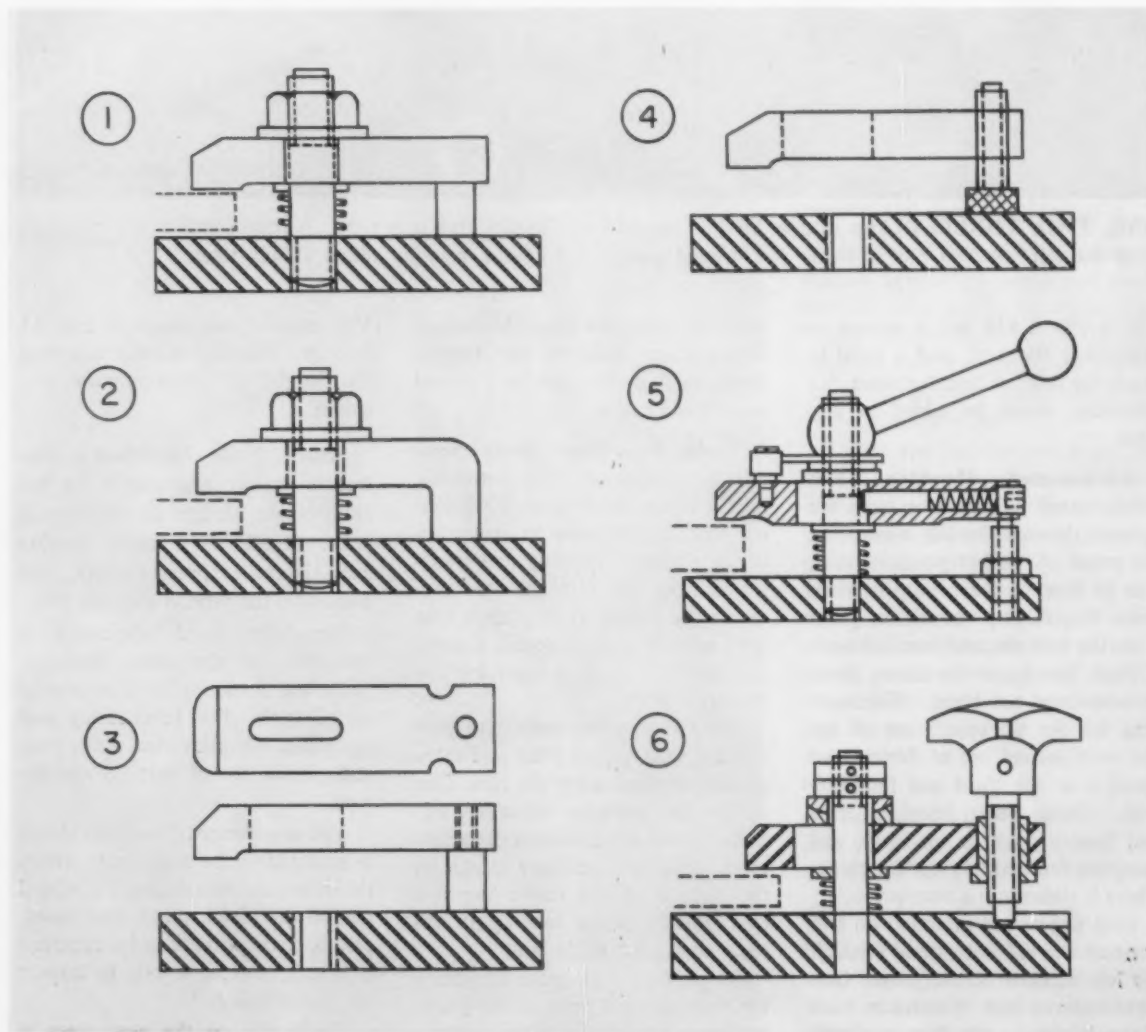
This means well designed jigs and fixtures, of course. With each of these you need the right clamps. But which ones?

Strap clamps for jigs and fixtures come in almost endless variety. Which type is best for a particular workpiece? That depends — primarily on the shape of the workpiece, then on the time it takes to clamp and unclamp it. In volume production of parts, every second

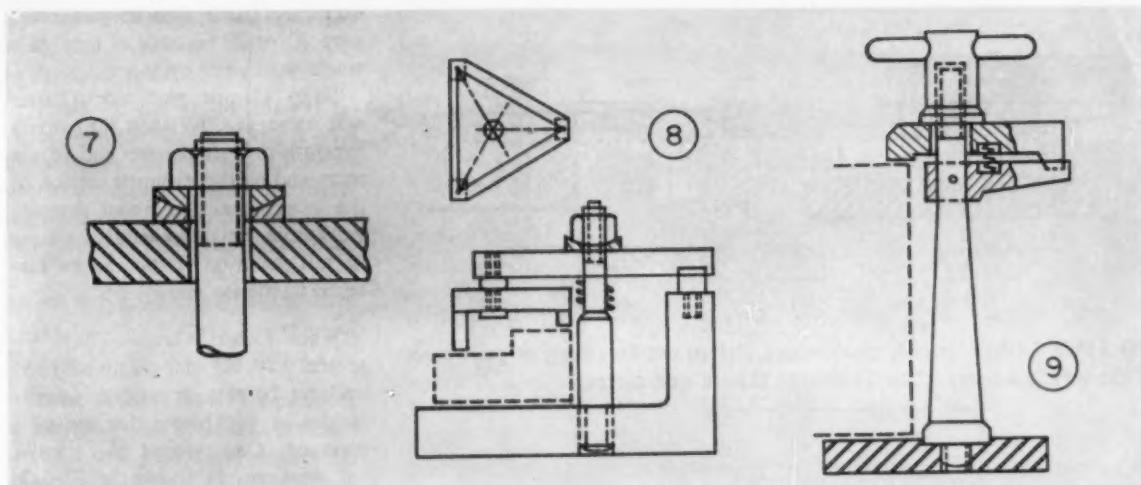
of time saved is important.

To avoid confusion, strap clamps may be classified according to: (1) the means used to apply clamping pressure, (2) their form of construction, (3) the manner in which they are handled by a machine operator.

The many ways to apply clamp-



BASIC STRAP CLAMPS: Springs and levers convert the simplest strap clamps into quick-acting devices.



IF HEIGHTS VARY: Spherical washers, adjustable fulcrum blocks, and elevated fulcrums adjust for height.

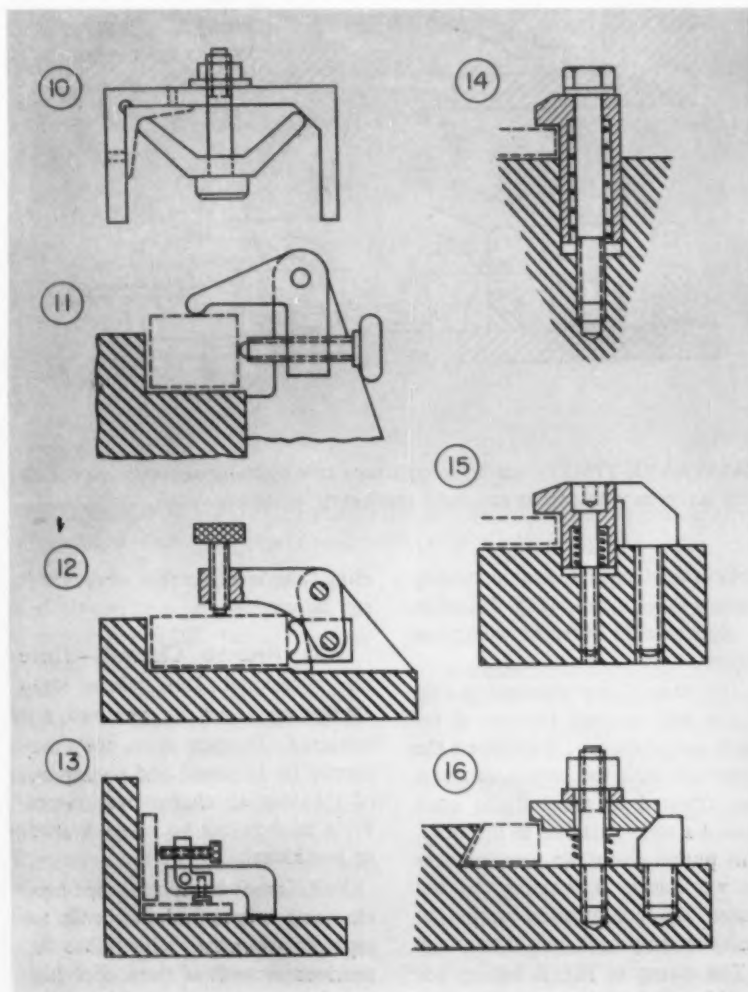
ing pressure include the use of screws, cams, wedges, tapers, levers, pneumatic and hydraulic devices, electromagnets, springs, and muscle power.

Built Many Ways—As for construction, strap clamps may feature either a loose or an integrated fulcrum block. Some are built to work in a fixed position; others are retractable. Still others clamp and unclamp by a swiveling action. There are single and double motion types, too. Also, some work vertically while others work laterally.

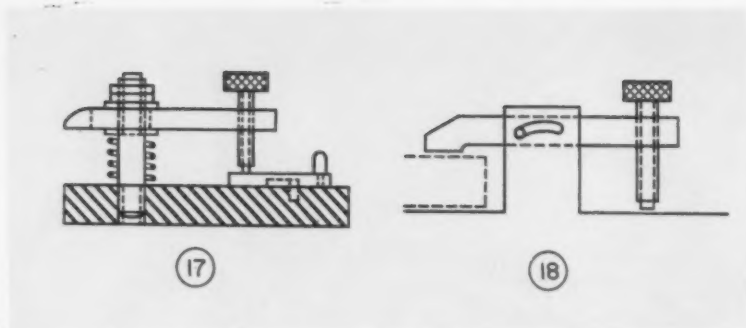
Handling or operating a strap clamp may call for the use of separate tools, such as wrenches. But there are semiautomatic designs for use where quicker action is needed.

The simplest of all strap clamps is the straight type sketched in Fig. 1. Fastened with a prisoner stud, a nut, and washers, it bears against both the workpiece and a loose fulcrum block. A compression spring usually goes between the strap and its base. This makes for quicker, easier handling. It keeps the strap elevated even with the workpiece and fulcrum block removed.

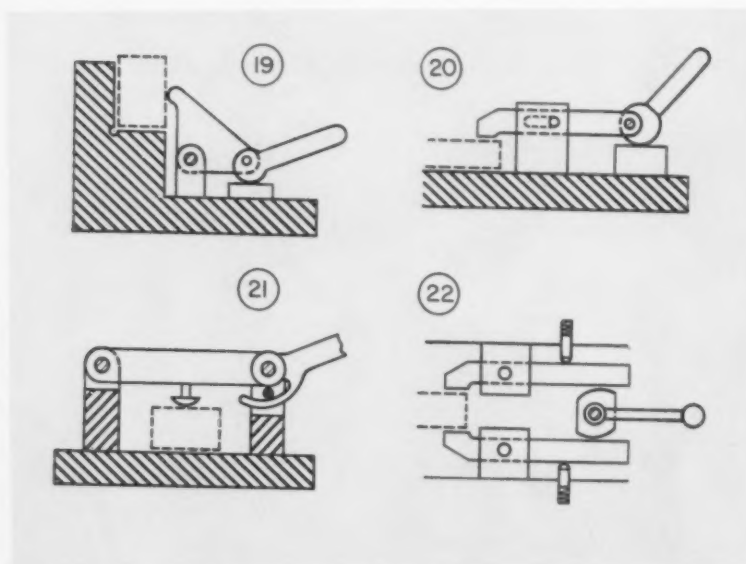
These Ideas Help—An improved design (Fig. 2), makes the fulcrum block (heel) an integral part of the strap. Slotting the strap (Fig. 3)



PROBLEM SOLVERS: Double-acting and hooked straps are used where space is limited, or where work must be clamped against stops.



NO TIME LOST: Special, quick-acting clamps can be swung or pulled out of the way in a hurry when it's time to change workpieces.



CAMS SAVE TIME: Cam-actuated straps save valuable seconds, especially with uniform workpieces and light machining pressures.

makes the clamp retractable; adding a screw-type fulcrum (Fig. 4) makes it adjustable to different workpiece heights.

The strap clamp sketched in Fig. 5 has still another feature: it retracts automatically. Tightening the upper nut with the handle causes a cam (riveted to the nut) to push against a roller fastened to the strap. This pushes the strap forward over the workpiece. Loosening the nut causes the compression spring to push the strap back out of the way.

The clamp of Fig. 6 has an adjustable-height fulcrum at the center of the strap and a screw at the outer end. This design speeds han-

dling, and is preferable wherever it can be used.

Why Remove Clamps?—There are occasional jobs where strap clamps need not be removed nor retracted. In such cases, they may simply be loosened and swung out of the way to change workpieces. Pivot motion can be either vertical or horizontal.

Still, even to loosen hex-head clamping screws and nuts calls for separate wrenches and takes up precious seconds of time. For high speed operation, it pays to use nuts and screws with handles, wings, or knobs which can be turned more

quickly. These devices can often save 20 or 30 seconds of time in a single workpiece cycle.

Strap clamps also work better and more exactly when they apply pressure only at the toe end of the strap and on the strongest section of the workpiece. To avoid marring workpiece finishes, suitable pieces of soft metal or plastic can be fastened to the toe end.

When Height Varies—There are several ways to compensate for non-uniform heights or surface irregularities in workpieces that must be clamped. One method uses spherical washers, as shown in Fig. 7. This allows the strap to adjust itself for minor size differences.

Another way is to put two or three pivoting, self-adjusting bearing points at the strap toe, Fig. 8. However, when workpiece heights vary considerably, it is best to use adjustable fulcrum blocks. For very tall workpieces, the fulcrum may be elevated on a column as shown in Fig. 9.

Using Bent Straps — On some jobs it is desirable to have the strap push and hold a workpiece firmly against two stops. Usually, the stops are in different planes and at right angles to each other. This can be done with various types of double-action straps.

The simplest type is a bent strap which holds pieces of angle iron in a drill jig, Fig. 10. Prismatic shapes can be clamped firmly with either of the pivoted-strap designs sketched in Figs. 11 and 12. Still another double-action clamp (Fig. 13) holds two pieces at right angles for a welding operation.

Where space is limited, a hooked strap (Fig. 14) may be the best bet. To help compensate for clamping thrust, an extra heel may be added, as shown in Fig. 15.

Another Space Saver — Is the problem one involving a special workpiece shape? Or is it one of limited space between the cutting tool and the jig or fixture? The clamp sketched in Fig. 16 might yield the answer. Its tapered strap-

end and fulcrum block press the workpiece downward and laterally at the same time.

It follows that production can be boosted appreciably with special quick-acting clamps. Fig. 17 shows one such design wherein the bearing surface under the fulcrum screw can either be turned or pulled back out of working position. The strap shown in Fig. 18 can also be pushed out of the way quickly by means of slots in the support columns.

Cams Work Fast—Compared to screw-type straps, cam-actuated types speed production where (1) work is uniform in height; (2) machining pressure is low, as in light drilling and milling.

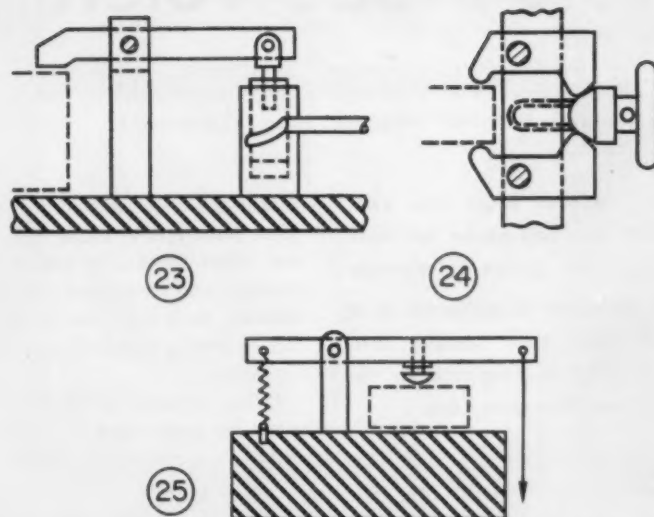
Basically, these devices simply use a cam and lever instead of a clamping screw. The cam may act upon either the center or the end of the strap. Where it acts upon the free end, the cam may be attached to the strap itself, or to the stationary base. Cam-actuated straps will also clamp workpieces laterally, as shown in Fig. 19.

For Extra Speed—There are several designs for extra quick-acting, cam-actuated straps. The one sketched in Fig. 20, for example, needs only a quick motion of one hand to move both the cam and the strap. Internal cams also provide quick action, as shown in Fig. 21.

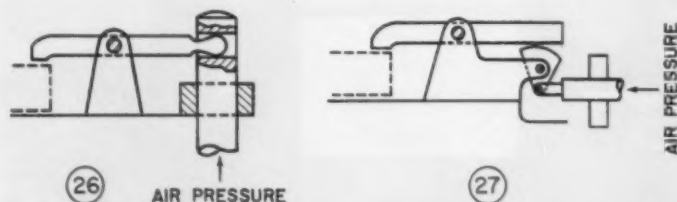
A simple way to get quick clamping with two straps at the same time is to use a common double cam, Fig. 22. As sketched, the cam axis parallels that of both strap-pivot pins. However, the cam axis can also be set at right angles to the pivot axes.

Wedges, Tapers, Levers — Still other means used to actuate strap clamps involve the use of wedges, tapers, and levers. For example, in Fig. 23, the handle of the fulcrum block moves along an inclined plane to tighten or loosen the strap. In Fig. 24, the tapered screw causes twin straps to clamp and unclamp simultaneously.

Of the many types of lever-actu-



THESE MAY HELP: Use of the wedge, the taper—even the muscle-powered lever—may be an efficient way to handle your clamping needs.



PISTONS SUPPLY FORCE: Pneumatic and hydraulic devices deliver precisely-timed, automatic power to a wide range of clamping jobs.

ated straps, the simplest design is sketched in Fig. 25. Here the strap is long enough so it can be held down by hand or foot pressure. When this pressure is released, a tension spring pulls the strap back to its open position.

Another efficient lever-actuated device is the familiar toggle clamp. Various forms of these clamps are widely used to hold workpieces in line with jigs and fixtures. Double-acting toggles, for example, will push a workpiece in both a horizontal and vertical direction, then grip it firmly in place. Other designs may be used to clamp and unclamp two

straps in unison on a single workpiece.

Pneumatic and hydraulic devices also provide fast, automatic clamping in high-production operations. Two of the most common devices for applying either vertical or horizontal piston motion to strap ends are shown in Figs. 26 and 27.

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Tests Probe Tolerance Limits

By **W. R. Kempf**—Precision Metals Div., Hamilton Watch Co., Lancaster, Pa., and
J. C. Clement—Industrial Nucleonics Corp., Columbus, O.

Until actual tests are conducted, you can never tell how far you can go on tolerances.

To measure in millionths is a fertile field now coming into practicality in response to today's need for precision.

■ Rapid developments in electronics have created demands for many metals rolled ultra thin and held to tolerances unattainable several years ago. Certain metals rolled to foil

thicknesses offer unusual characteristics, mainly in reduced eddy current losses for use in pulse transformers and computer switching circuits. Such foils also fit in with the increasing trend toward miniaturization.

It has resulted in efforts to develop the application of equipment and skills necessary to produce metals in strip form to a thickness of 0.0001 in. and to tolerances of ± 0.000005 in. Precision Metals Div., Hamilton Watch Co., has un-

dertaken a program to explore the ultimate capabilities of available equipment. The skills necessary to achieve these goals were based on previous knowledge gained in the production of hairsprings and mainsprings for the company's watches.

Compare a human hair of 0.0023 in. diam with the edge of a metal foil 0.000126 in. thick. It gives you an idea of the fineness of measurement required.

Use Beta Gage—Included in the



CHECK ON PRECISION: Beta radiation gage (mounted at right) detects variations in foil thickness.

Mill reel (center) uses special control to take up ultra-thin foil of maximum width of 4 in.

equipment is a ZR-32 Sendzimir rolling mill, manufactured by The Waterbury Farrel Foundry and Machine Co., Waterbury, Conn. The unit is equipped with two AccuRay beta radiation gages made by Industrial Nucleonics Corp.

The operating principle of the beta gages is the use of radiation from an isotope for noncontacting measurement of mass. Since the density of each metal is constant, the read-out is in terms of thickness.

With years of metrology background, the Hamilton Physical Measurements Laboratory took the responsibility for calibrating the AccuRay gages. Master gage blocks with a known correlation to U. S. Bureau of Standards blocks within 0.000002 in. became the primary standard and were used to calibrate the laboratory master gage blocks to the same degree of accuracy.

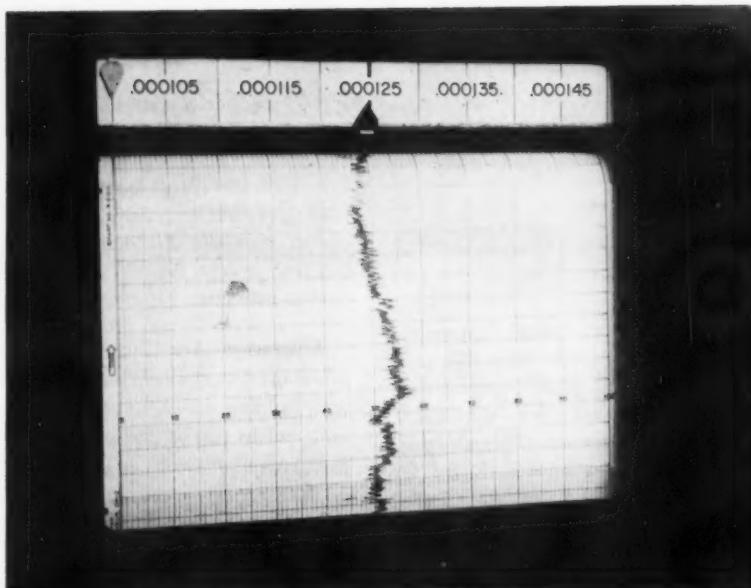
Samples for Calibration — These laboratory blocks were used to set up an accurate comparator gage. Foil samples of different materials and thicknesses were measured on the comparator gage 10 times each and then inserted into the beta gages.

The resulting beta gage readings were plotted to provide calibration curves. The curves formed the basis for setting up the sensitivity span on the recorder.

For the final passes on 4-79 Moly Permalloy, the full 10-in. scale on the recorder equals a thickness of 0.00005 in. Since the chart is divided into 100 parts, each minor line on the chart equals 0.000005 in.

Consider Oil Film — The rolling oil film on the strip was a consideration in accuracy of measurement. A uniform film is maintained by continuous control. Since beta radiation sees the film as mass at about 1/10 that of the metals rolled, the effective compensation is about 0.000003 in. (depending on the density of the metal rolled) in the 0.000125-in. thickness range.

The routine inspection of production rolled ultra-thin strip on a com-



RECORD ACCURACY: Recorder traces thickness of 4-79 Moly Permalloy rolled to 0.000125 in. Least count on chart is 0.0000005 in.

Metals Respond to Precision Rolling

Metal	Size Regularly	
	Rolled (in.)	Tolerance \pm (in.)
4-79 Moly Permalloy	0.000125	0.000005
Titanium	0.000300	0.000005
Beryllium copper	0.000250	0.000005
Dynavar	0.000250	0.000008
Tantalum	0.000500	0.000100
Type 17-7 PH stainless steel	0.000650	0.000100

parator gage shows that in most cases the maximum difference between the beta gage and the comparator gage reading is about 0.000002 in.

Study Mill Practice — As were the beta gages, the Sendzimir ZR-32 rolling practice was the subject of an engineering study and changes and improvements were made. These include special techniques for grinding and finishing of work rolls, handling of the foil, refinishing of strip-tension controls and developing operator skill.

Copper strip is the thinnest material rolled to date—to a finished thickness of 0.00007 in. Representative metals rolled in the 0.0001-in. range include 4-79 Moly Permalloy, titanium, Dynavar, tantalum, beryllium copper, zirconium, and molybdenum. There's continuing progress in the further development and improvement of techniques to roll these and other metals even thinner and to closer tolerances.

The list of metals in the table shown above gives the sizes regularly rolled and the tolerances generally held.

Epoxy Aids Turbine Builder

Epoxy resins, a model shop finds, are cheap and easy to work with.

They realistically duplicate metal products, too.

■ Model shop men appreciate realism. That's why they like prototypes of the same materials as their production-line duplicates. Sometimes, however, this isn't feasible. Costs can be too high. Or technical stumbling blocks may be too many.

Such was the case at Solar Aircraft Co., San Diego, Calif. This engine maker needed an identical model of its T-300 gas turbine for display purposes.

Costs Too Much—The company found metal blades would cost too much to be practical. But it did not abandon completely the idea of a model. Instead, it considered other materials. C. H. Miller Co., La Mesa, Calif., suggested use of epoxy resins.

Selecting Shell Chemical Corp.'s Epon-828, this plastics engineering firm cast the rotors complete with blades. It also molded the stators.

Not only did the model fill the bill, but it cost just about 7 pct of earlier estimates for metals.

Tolerances Are Close—A major problem the model builders faced was holding close tolerances; the unit had to run at 200 rpm exactly as the regular T-300 engine does at 30,000 rpm. Tolerances were ± 0.002 in. for the rotors; for blades, allowance was almost zero.

Each rotor blade has a camber both top and bottom; these are about 0.050 in., tapering down to a knife-like edge. Distance between blades is about $\frac{3}{8}$ in. on the largest rotor with a $\frac{1}{4}$ -in. overlap on each blade.

Why Use Epoxy?—High strength and dimensional stability earned epoxy resin the job. Epon-828 holds tight tolerances. It doesn't warp, distort or shrink. This is im-

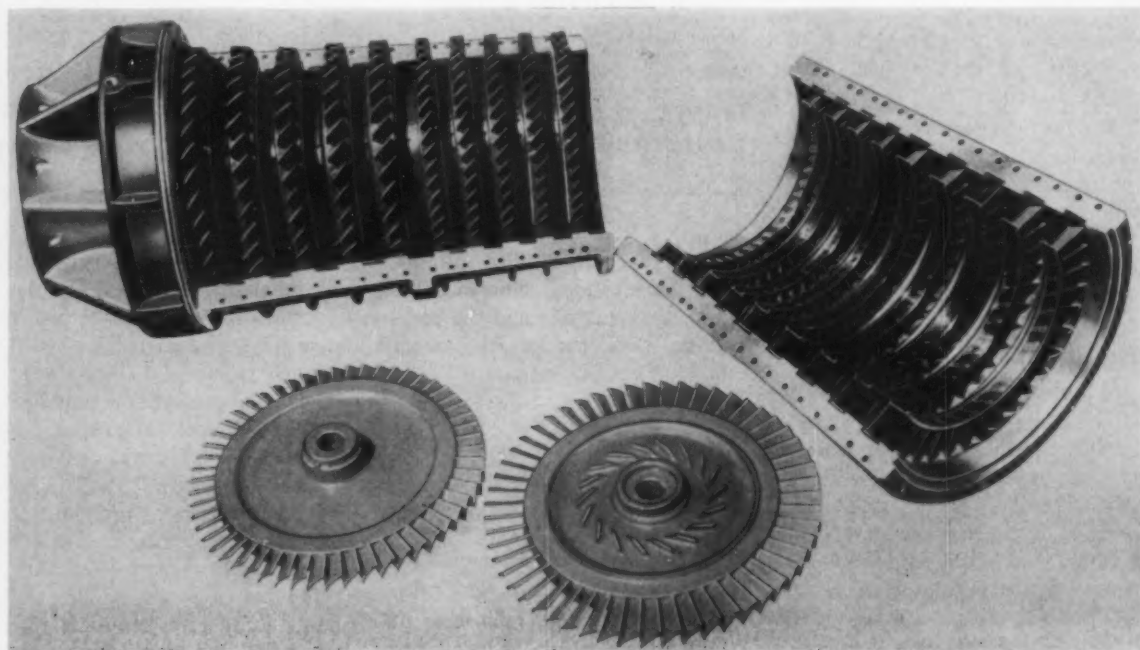
portant. Clearance between blades and stators is so close that even slight warpage would shatter the blades.

C. H. Miller Co. cast each rotor complete with blades in a one-piece mold under centrifugal force. The actual formulation contained Epon-828 and a curing agent with Versamid resin as a modifier.

Gellation of the resin material takes place at room temperature within two hours generally. However, these castings stayed in the mold 24 hours. This assured a complete, thorough cure.

Plaster Plays Part—The casting firm first made a plaster model for each individual rotor. From this, they produced a flexible mold. Flexibility was vital; the mold had to be removed without tearing off any blades. A $\frac{1}{4}$ -in. backdraft permitted pulling the mold off the rotor.

To get bubble-free castings, minute vents were opened in the molds. This let out entrapped air.



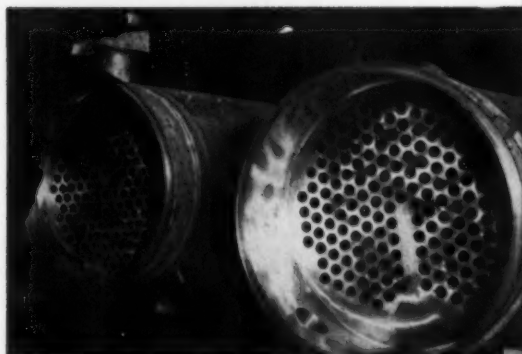
WORKING MODEL: This model, of epoxy resin, runs at 200 rpm like a regular gas turbine does at 30,000 rpm.



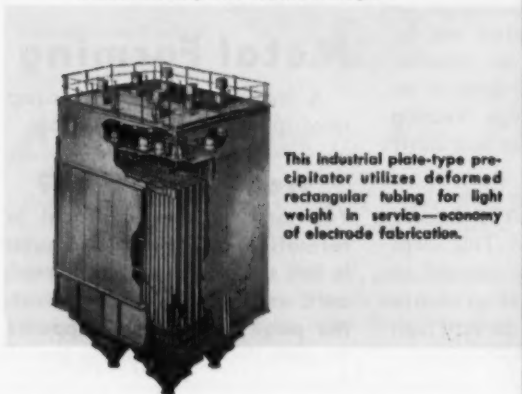
Sea water evaporators capable of producing 30,000 gallons of fresh water daily depend on welded stainless steel tubing for corrosion resistance.



The casings and plugs in this sodium reactor core are welded stainless steel tubing to insure corrosion resistance and uniform fit.



The ductility of welded steel tubing for rolling-in, plus reliable corrosion resistance and durability are added advantages in this heat exchanger.



This industrial plate-type precipitator utilizes deformed rectangular tubing for light weight in service—economy of electrode fabrication.

**IT'S TIME...
TO DESIGN WITH
TUBING IN MIND**

IN CRITICAL APPLICATIONS ONLY



SERVES SO WELL!

Carbon • Alloy • Stainless Steel

When it's a case of perfect fit, positive uniformity, high strength-to-weight ratio, extremes of fabrication, heat and corrosion resistance—there's a type and shape in welded steel tubing to do your job best.

The reason? These are *natural* properties of welded steel tubing—created by its design and manufacturing process.

Your quality tube producers offer the grade, shape and size for your most exacting requirements.



Specific information on welded tubing is available on request to:

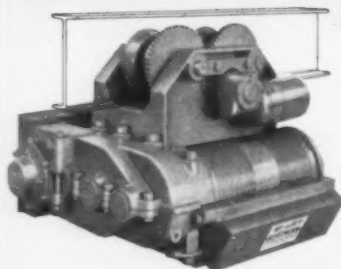
FORMED STEEL TUBE INSTITUTE

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An Association of Quality Tube Producers

LC-982

NORTHERN



HEAVY DUTY HI-LIFT HOISTS with TROLLEY DRIVE

Northern Hi-Lift Hoists, in all models from two through 15 tons capacity, with all their heavy duty, rugged features, including the same low headroom, are now available with a new, inexpensive trolley drive designed for moderate speeds, and for single or variable speed control. A worm drive provides smooth, quiet and trouble-free operation. Compact design and arrangement allow maximum approaches with minimum space requirement.

These two-motor hoists are available for A.C. or D.C. current, and are built with standard or fluid coupling drives. Write for further details to:

NORTHERN ENGINEERING WORKS
210 CHENE ST., DETROIT 7, MICH.



EH-3555

TECHNICAL BRIEFS

Furnace Uses Metal Instead of Brick

Metal as insulation is growing in use. Designers find it a very effective reflector of heat back to the source.

Such insulation lets a new vacuum furnace heat-up or cool rapidly.

■ Metal insulation, though it has disadvantages, is finding more and more uses. Some plants cover pipe with it. Others have long known reflective advantages of metal in furnaces and other setups.

Designers of a new vacuum furnace have gone a step further, using cylindrical metal shields instead of brick on inside furnace walls. The unique metal insulation allows extremely high vacuums inside at very high temperatures.

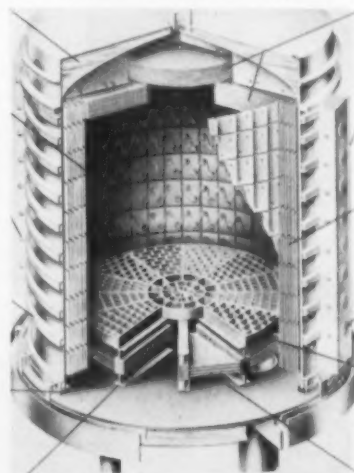
Response Is Fast—Developed by General Electric Co., Schenectady, N. Y., the furnace attains 2700°F heats in a high vacuum. Fast response in heat treating and brazing cycles is a key feature of the electric bell-type unit.

Quick heat-up and cooling cycles are characteristic of the furnace. Its principal use is heat treating of superalloys of stainless steel and refractory metals such as titanium and zirconium. Since there is no insulating brick, a high vacuum can be quickly obtained and easily maintained.

Water Cools It — The furnace casing is water jacketed. This keeps it cool. Thus it retains strength to withstand atmospheric pressure while the work load is at very high temperatures. Losses due to convection are reduced by the vacuum.

Protective gas atmosphere may also be used in the furnace.

Radiation shields of heat-resisting alloy metal are arranged in several layers of concentric cylindrical



Cutaway view shows cylindrical metal shields instead of brick.

shells on the inside walls of the heating chamber. Top and bottom have separate layers of alloy sheets in a horizontal position. The metal forms a complete enclosure around material being heat treated, retarding heat losses from the furnace due to radiation.

Metal Forming

A leading metal-forming equipment producer has announced a

Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 101. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

new application of its hydraulic-action formers. This is the precision attaching of ball fittings to parking brake cables for automobiles. Two of these machines are already in satisfactory operation. The setup is actually a modification of a rotary swaging machine. The modification is a spindle mechanism which allows wide opening of the dies; this permits swaging between shoulders.

Fenn Mfg. Co., Newington, Conn., is their manufacturer.

Handling

Heat-resistant loader banks furnace door

A Midwestern steel producer relies on a fast-moving, heat-resistant tractor shovel to bank doors of its seven open hearth furnaces with dolomite. With furnace temperatures close to 3000°F, the banking operation must be rapid to protect personnel and equipment from the heat.

Granite City Steel Co., Granite City, Ill., charges each of its furnaces about every 11 hours. To protect the inside furnace lining, a bucket load (about 16 cu ft) of raw dolomite is used to bank each furnace door.

High temperatures inside the open hearth furnaces necessitate a fast operation. In addition, before the steel firm adopted the tractor shovel, the furnace temperature dropped somewhat when a door was held open several minutes to allow time to hand-shovel the dolomite.

Here's The Answer—Trouble theoretically ended with the purchase of a "Michigan" tractor shovel, made by Clark Equipment Co. from heat-resistant steel. Its fuel tank is safely in the rear. Hydraulic controls make it fast-operating.

Torque converter and power-shift transmission means no foot-clutching is necessary to change speed or direction. And the operator wears a welder's mask to guard his face

and eyes from the blinding heat.

Still More Problems—But the tractor shovel needed another safeguard. The heat made the hydraulic fluid bubble and foam through the hydraulic system. Bucket tilt and bucket arms worked sluggishly. Switching to Tydraul Oil 150 solved this though. This is a fluid that works effectively at temperatures of 450°F.

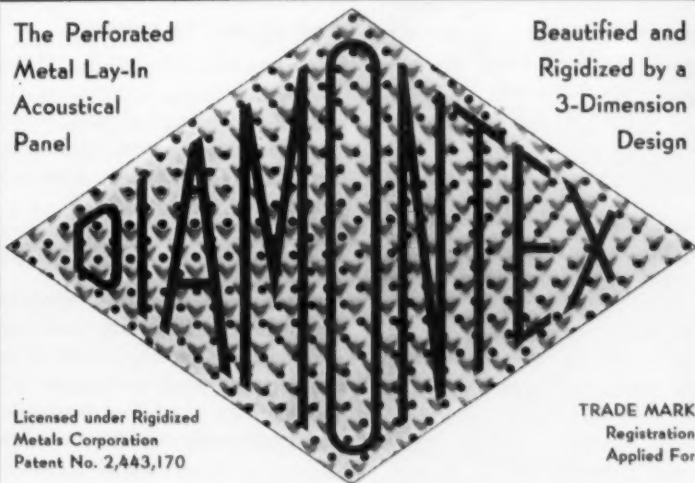
With the tractor shovel poking into the furnaces to unload the dolomite, the temperature of the machine may momentarily rise a couple hundred degrees—but not enough to affect the hydraulic fluid now used.

Machining

A digest of Unified and American National screw thread data is available from Eastern Machine Screw Corp., New Haven 6, Conn.

It concerns thread standards, presenting major, minor and pitch diameters.

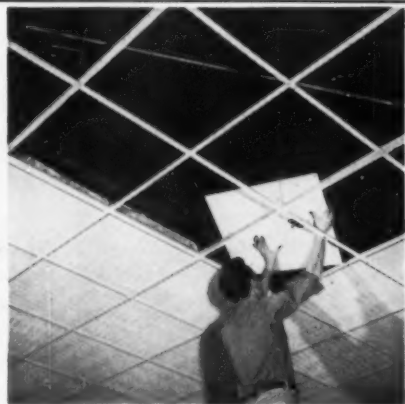
The Perforated
Metal Lay-In
Acoustical
Panel



Beautified and
Rigidized by a
3-Dimension
Design

Licensed under Rigidized
Metals Corporation
Patent No. 2,443,170

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**Easily Installed and Removed
Versatile and Decorative**

A New Concept in Acoustical Ceilings

... which meets every noise-control requirement in Schools, Hospitals, Restaurants, Food Markets, Bowling Alleys, Work Rooms, Offices, etc. with unsurpassed Appearance, Economy, Efficiency, Incombustibility and Ease of Installation.

A NEW illustrated bulletin, No. 47, gives complete information regarding DIAMONTEX Acoustical Panels and their application to either new or existing buildings. Write, today, for a free copy.

The distinctive 3-dimension rigidizing design creates a decorative diamond-shaped pattern on installed DIAMONTEX Panels, which varies 90-degrees in direction according to the manner in which the panels are laid in the supporting grid structure, as shown in the illustration above.

Provision is made, also, for applying DIAMONTEX Panels to existing acoustical ceilings by means of either screws or toggle bolts and a special type of molding which covers the heads of the screws or bolts after they are in place.

DIAMOND MANUFACTURING CO. WYOMING (Wilkes-Barre Area) PA.

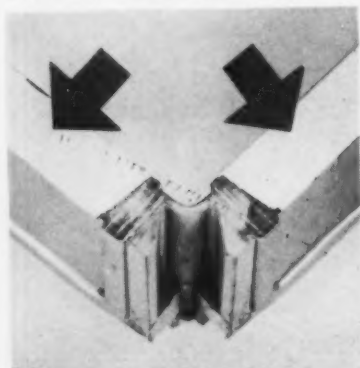
Foam Is Fastener For New Hinge

Modern fasteners come in many various materials. Now foam is moving into the fastening field.

Not only does it help join hinges, but it provides strength, bond, and insulation all at the same time.

■ Urethane foam filling lets a storage cabinet maker eliminate nuts, bolts and screws from lids it produces. The foam bonds all parts so securely that no other fasteners are needed.

Used by Keaton Rubber Co., Kearny, N. J. in the making of "flip-flop" lids for ice cream cabinets, the foam also eliminates need for a separately assembled hinge. Its



Foam (arrows) fills all spaces making the frame a hinge.

structural strength permits a design in which a thin section of the synthetic rubber frame serves as a durable hinge.

Foams In-place — The plastic which fills the lid is Nopcofoam. This is a foamed-in-place polyurethane manufactured by the Nopco Chemical Co., North Arlington, N. J. This material fills completely

all spaces into which it is foamed. It also bonds tightly to every surface it touches.

The plastic, in addition to being the insulation, is also the main structural member of the lid.

Casting

Low cost ceramic tooling suitable for use up to 3000°F can be produced by a simple casting technique. Using a high temperature material of Duramic Products, Inc., the simple fabricating method works like this: From an aluminum master of the finished tool, a plastic mold is formed, and into this negative the ceramic slurry is poured. After setting, the finished casting is heat treated at a temperature slightly above its required operating temperature. It's then ready for use.

Brazing

Liquid flux is now available for torch brazing in production where automatic systems are used. Dominant benefit of the flux is cleanness of the work after brazing, an inherent feature which is independent of the operator. And one which eliminates virtually all aftercleaning, says All-State Welding, Alloys Co., White Plains, N. Y.

Painting

A new one-coat aluminum paint makes a primer first coat unnecessary—even on lightly rusted metal surfaces. Its producer, Carter Paint Co., Liberty, Ind., recommends it for hard-to-reach areas where erection of scaffolding and

shifting of ladders is an expensive operation, or where speed of application is important.

Insulation

Insulated blankets and housings, factory-sheathed by Johns-Manville in heat-resistant foils, are available to fit unusual shapes. They permit low-cost, assembly-line installation for service to 2000°F. The material is strong, lightweight and precision-engineered.

Refractories

A gunning material for lining of ladles and cupolas with a PCE of cone 32-plus and a guaranteed maximum moisture content of 3½ pct or less has been introduced. Savre & Fisher Co., the developer, says it will lengthen the life of refractory brick in cupolas and ladles and provide significant savings in time and labor.

Lubricants

Hazard-free oil may cut cost of making oxygen

Chemically inert and hazard free, a new lubricating oil can cut the cost of producing industrial oxygen considerably. So states Halocarbon Products Corp., the lubricant's maker.

The oil is based on new chlorotri-fluoroethylene polymers.

Does Not Explode — Ordinary lubricating oil and compressed oxygen may combine explosively. Thus, compressors used in oxygen production have heretofore been lubricated with water. Or they have been

Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 101. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

run dry with fragile carbon rings.

Downtime for repairs frequently occurred. This meant high operating cost. Because Halocarbon oil presents no flammability hazard with compressed oxygen and is a good lubricant, oxygen producers call it a significant advance.

Linde Co. has specified the oil as an oxygen compressor lubricant in tonnage oxygen plants.

Important to Steel—What makes this development important are recent advances in use of oxygen in steelmaking. This climbed from about 30 cu ft per ton in 1930 to over 200 cu ft per ton in 1957.

The U. S. Commerce Dept. estimates that in 1957 over 1,000,000 tons of bulk oxygen were used in this country, nearly double 1952 figures.

Changes Are Minor—To use Halocarbon oil in standard compressors only minor equipment modifications are needed: in the packing material and in the addition of a forced feed lubricant feeder. In some cases, an electrical heater is used to control the viscosity of the lubricant.

Unlike the water-lubricated compressor which must be taken out of service about once a week for maintenance and repairs, Halocarbon-lubricated equipment is serviced once a year.

Wire

Copper wire clad with a chrome-iron alloy is a recent development of Sylvania Electric Products Inc. It's an electrical conductor for equipment which operates under high temperature, corrosive, and oxidizing conditions.

Materials

Silicon nitride is now available which operates at and over 3000°F in certain atmospheres. Haynes Stellite Co., Kokomo, Ind. makes the material. Tubes made of it have been continuously immersed in unalloyed aluminum for 3000 hours. They showed no evidence of attack.

NEW BOOKS

"The Structure of Steel" is a simple and, as far as is possible, non-technical explanation of the metallurgical structure of various steels and steel alloys. It aims at buyers and non-metallurgical engineers. The book points out how properties of a steel depend on its composition and treatment during manufacture. Basic chemistry of iron and steel and testing methods are discussed. 176 pp. \$10 per copy. Philosophical Library, 15 E. 40th St., New York 16.

"Developing Executive Capacity" is a cornucopia pouring out ideas and suggestions on how to be a better executive. Though primarily of value to lower management, it contains thoughts long known and maybe long unconsidered by top men. Some included statements are so obvious readers may guess they are there merely to fill space. Still other ideas may be truly helpful.

It treats managing as a deadly serious game in which fun is an important by-product. Once the reader gets used to the unorthodox layout (and this is quite a barrier) the clear, sharp writing makes for enjoyable reading. 204 pp. \$4.95 per copy. Prentice-Hall, 70 Fifth Ave., New York 11.

"Industrial Maintenance Painting" is a workman's manual. Not only painting, but surface preparation is discussed. And costs of comparative processes are considered. Coating application, shop painting of steel, inspection, specification writing, testing, estimating, tank cars and vessels, colors, solvents and other subjects are reviewed. 189 pp. \$5.50 per copy. Paul E. Weaver, 4025 Brady St., Baton Rouge 5, La.

"Conference on Welding Engineering" contains 35 technical papers delivered at a U. S. Army research and development gathering. 469 pp. \$6 per copy. PB 131739. O.T.S., Washington 25, D. C.



STYLE AND SIZES FOR ALL MACHINES ON WHICH THREADS ARE CUT

This die head is unique

THERE IS NO OTHER LIKE IT

It cuts threads with insert chasers. These are, in reality, small sections of the business end of large and expensive chasers, but with this important difference: *their cost is so low they can be even thrown away when dull.* For example, for less than \$50 you can get a dozen sets of insert chasers, each set ground ready to go. Change now to insert chaser die heads and watch your performance improve. "UNIFIED AND AMERICAN SCREW THREAD DIGEST" sent free on request.

THE-EASTERN MACHINE SCREW CORPORATION 20-40 Barclay St., New Haven, Conn.

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 101.

Proving Rings

Proving ring specifications and accessories are listed in a 4-page bulletin. (Morehouse Machine Co.)
For free copy circle No. 1 on postcard, p. 101

Alloy Fabrication

"Guide For Purchasing Complex and Unusual Alloy Sheet and Light Plate Fabrication" is a 30-page booklet. It describes products avail-

able from a fabricator of alloys such as stainless steel, aluminum, Monel, Inconel, nickel, titanium and others in gages to $\frac{3}{8}$ in. (S. Blickman, Inc.)
For free copy circle No. 2 on postcard, p. 101

Welder

Describing a combination ac, dc, and inert-gas welding machine is a 4-page folder. It gives advantages of having one welder that does all three types of welding. (Hobart Bros. Co.)
For free copy circle No. 3 on postcard, p. 101

Thermistors

Fifteen thermistor circuits are

described in an electronics catalog. Its 16 pages also give specifications for nearly 400 different thermistors. (Fenwal Electronics, Inc.)
For free copy circle No. 4 on postcard, p. 101

Measuring Units

Many new measuring instruments are outlined in a 28-page catalog. Equipment covered: measuring microscopes, cathetometers, optical benches, accessories, and more. (The Ealing Corp.)
For free copy circle No. 5 on postcard, p. 101

Speed Reducers

Shaft-mounted speed reducers are discussed in a 10-page engineering manual. Covered: selection, horsepower ratings, dimensions, construction, installation and maintenance. (Westinghouse Electric Corp.)
For free copy circle No. 6 on postcard, p. 101

Materials Handling

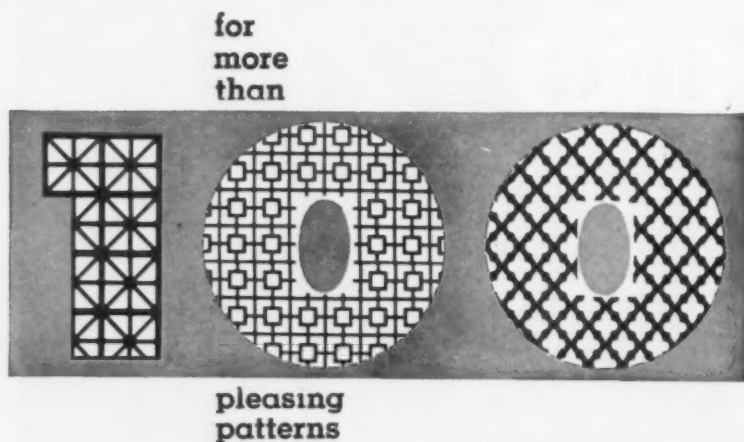
Containing some 90 pages, a booklet covers conveyors and special material handling equipment. (For free copy write on company letterhead to Conveyor Systems, Inc., 6451 Main St., Morton Grove, Ill.)

Spot Welder

Air or foot operated spot welders described in an 8-page bulletin are bench mounted. They join small parts of unusual metal combinations in precise shapes and sizes. (Taylor-Winfield Corp.)
For free copy circle No. 7 on postcard, p. 101

Welded Bellows

Metallic welded bellows outlined in new literature may have broad applications in aviation, missile, instrumentation, automation and industrial fields. The bellows as-



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Increase your product's attractiveness—and sales by including a Hendrick Perforated Screen in your design. You can select from hundreds of attractive designs in commercially rolled metals and gauges . . . or in masonite, rubber, plastic, or insulated board. You can choose from many different sizes and shapes, with either plain or panel effects. Hendrick perforated screens are made by the Pioneer of Perforated Metals, and backed by years of experience and modern manufacturing facilities.

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semblies can be manufactured from any suitable weldable material. This could be 300 and 400 series stainless, 17-7 PH, Inconel-X, Monel, Ni-Span-C, Hastelloy, titanium, zirconium, beryllium copper or others. (Robertshaw-Fulton Controls Co.)

For free copy circle No. 8 on postcard, p. 101

Gage Saver

Automatic shut-off valves featured in a bulletin provide overload protection for gages and instruments in hydraulic and pneumatic systems. Six models range from 10 to 10,000 psi. (Sprague Engineering Corp.)

For free copy circle No. 9 on postcard, p. 101

Heat Treating

The front cover of a company publication colorfully pictures the totally automated heat treat operation of Timken Roller Bearing Co. The issue contains articles on continuous strip heat treatment, mechanized sintering and small parts processing. (Surface Combustion Corp.)

For free copy circle No. 10 on postcard, p. 101

Lathe Control

All turret lathe functions formerly done by hand are performed automatically via a new control unit. It allows lathe operation three ways: fully automatic, semi-automatic or completely manual. Built-in safety features protect lathe, tools and workpiece from damage due to inadvertent operation. A catalog gives details. (The De Silvey Corp.)

For free copy circle No. 11 on postcard, p. 101

Bearings

A bulletin introduces a new spherical roller bearing which absorbs the heavy loads, high speeds, and eccentric motion of vibrating screens while meeting rigid lubrication requirements. (SKF Industries, Inc.)

For free copy circle No. 12 on postcard, p. 101

Metal-Ceramics

Metal-ceramics, says a new booklet, show definite promise in high-temperature service. Here many

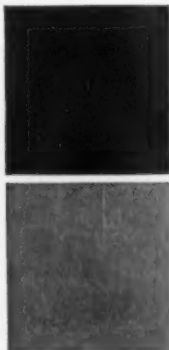


SHOW STOPPER

It's the new Torrington Verti-Slide, the first major innovation in the field of 4-SLIDE equipment in 50 years!

This machine was designed to meet a growing need for greater productivity and profitability in the cost-critical area of wire and strip forming.

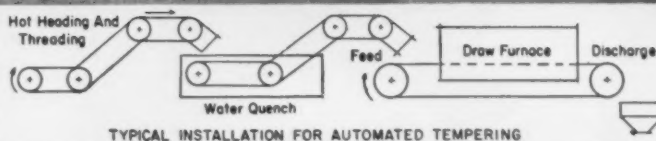
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METAL-MESH BELTS RESIST WARPING OR BUCKLING—CUT COSTS IN CONTINUOUS HEAT TREATING

Moving thousands of pounds of bolts per hour through 1150° F. temperatures is a cinch for rugged Cambridge Woven Wire Belts because they're designed to take high temperatures with a minimum of operating trouble and maintenance. And, open mesh construction assures high product uniformity. Furnace heat flows through the belt and around product for fast, thorough processing.

In cleaning, brazing, oiling and quenching operations, too, Cambridge Belts help increase production and maintain high product uniformity. Here's how:

CONTINUOUSLY MOVING BELTS ELIMINATE BATCH PROCESSING—give faster, less costly production; reduce slow, costly manual handling.

ALL-METAL CONSTRUCTION IS HEATPROOF, COLDPROOF, ACIDPROOF—Cambridge Belts can be woven from any metal or alloy to take sub-zero or up to 2100° F. temperatures, yet remain impervious to attack from water, acids or caustic solutions.

OPEN MESH PROVIDES FREE AIR, LIQUID CIRCULATION—gives more uniform heating, cooling, drying; permits flash drainage of solutions, rapid washing, quenching and cleaning.

SPECIAL SURFACE ATTACHMENTS AVAILABLE—raised edges or cross flights to hold product on belt during movement.

Talk to your Cambridge Field Engineer soon—he'll explain the many advantages of continuous heat treating on Cambridge Woven Wire Belts. He'll recommend the belt size, mesh or weave—in the metal or alloy—best suited to your operations. You'll find his name in the classified phone book under "BELTING, MECHANICAL". Or write for FREE 130-PAGE REFERENCE MANUAL giving mesh specifications, design information and metallurgical data.



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FREE LITERATURE

metals or ceramics alone can't do the job. Typical parts of metal-ceramics: rocket nozzle inserts, jet flame holders, thermocouple tubes, pump seals, furnace mufflers, flame guardian rods, and molten metal control pins and spouts. (Haynes Stellite Co.)

For free copy circle No. 13 on postcard, p. 101

Tubing

Hollow parts makers may be interested in a new folder. It explains how to simplify production by selecting the proper mechanical tube. Included are tables for cold drawn and hot finished seamless carbon steel tubing. (Tubular Products Div., Babcock & Wilcox Co.)

For free copy circle No. 14 on postcard, p. 101

Conveyor

Various uses of gravity wheel conveyors are talked about in a 16-page brochure. Among other topics, it deals with selection of conveyors, construction features and accessories. (Rapids-Standard Co., Inc.)

For free copy circle No. 15 on postcard, p. 101

Unique Milling

A new booklet describes a unique continuous milling process and a new sculpture milling technique. (Precision Shapes, Inc.)

For free copy circle No. 16 on postcard, p. 101

Circuit Breakers

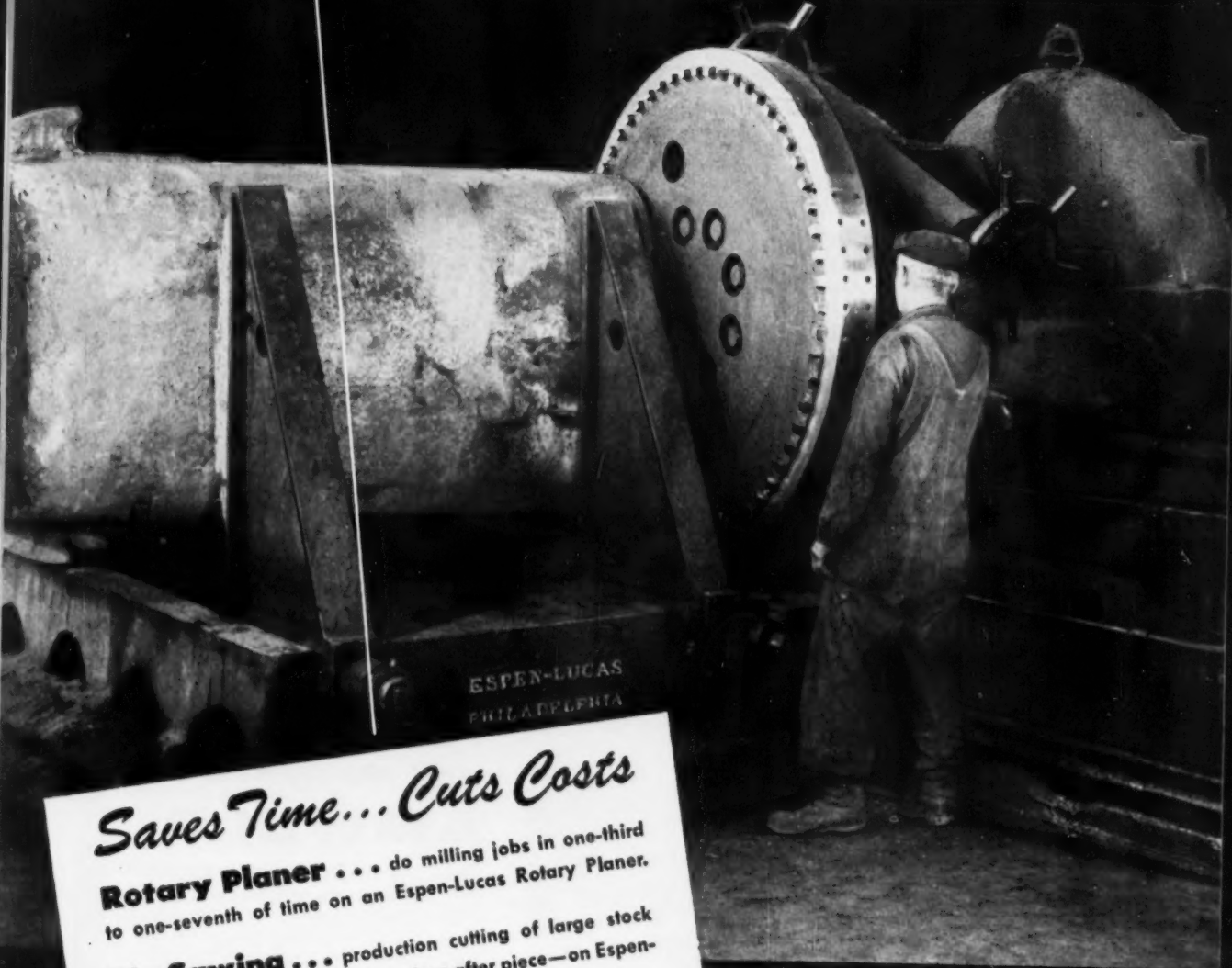
A 56-page catalog contains pricing, dimensional and application data on an extensive line of molded case and large air circuit breakers. (I-T-E Circuit Breaker Co.)

For free copy circle No. 17 on postcard, p. 101

Polishing, Buffing

Straight-line automatic polishing and buffing machines are outlined in a 16-page booklet. Basic factors to consider when selecting such machines are discussed. (Acme Mfg. Co.)

For free copy circle No. 18 on postcard, p. 101



ESPEN-LUCAS
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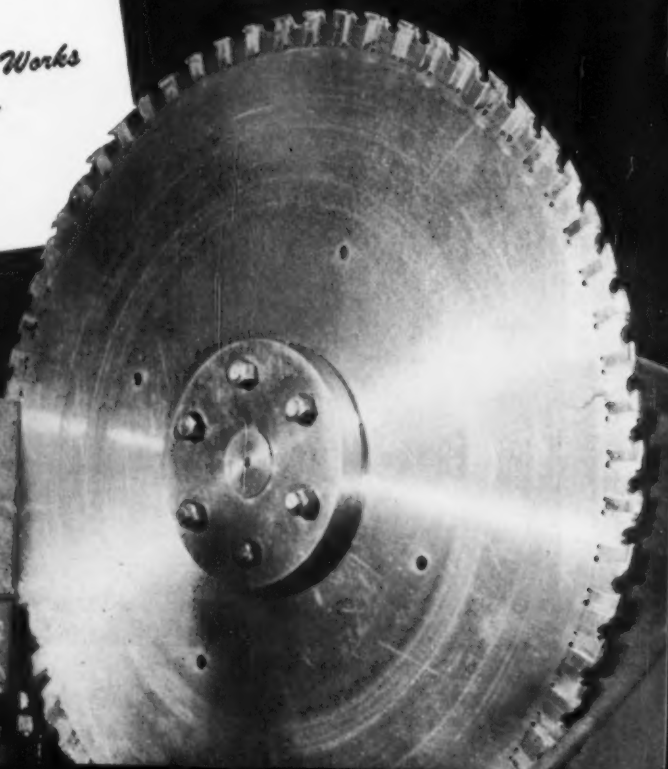
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Rotary Planer . . . do milling jobs in one-third to one-seventh of time on an Espen-Lucas Rotary Planer.

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FREE LITERATURE

Continued

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Motorized Spindles

Recently released is a catalog on a completely redesigned line of precision motorized spindles. Sizes run from 1/2 to 10 hp. The new design permits selective assembly of single or compound feeds to develop a composite unit of a motorized spindle with the preferred traverse. (Cincinnati Electrical Tool Co.)

For free copy circle No. 19 on postcard

Conveyors

Fifty years of mechanized handling experience go into an up-to-date book on conveyors. Its 32 pages picture actual setups handling everything from small parts to heavyweight steel coils and castings—all via continuance conveyors. Almost every conceivable system appears. (Mathews Conveyor Co.)

For free copy circle No. 20 on postcard

Steel Strapping

With increases in production strapping, and advent of power strappers for every use, a strapping firm has designed new accessories. These are said to up operator efficiency by suspending the strappers in all conceivable positions. They add portability to the suspended tools, too. (Signode Steel Strapping Co.)

For free copy circle No. 21 on postcard

Coil Handlers

Coil handling equipment is featured in a 20-page catalog. It offers a complete line for press rooms, including roll feeds, straighteners, reels and cradles, and other coil

and sheet handlers. (F. J. Littell Machine Co.)

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Belting

Technical information in a new bulletin deals with adhesion belting. It tells about a new principle in transmission belting. Maintenance costs, it says, can be slashed considerably by using this belting. (Coriamid, Inc.)

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Better Grinding

Better grinding at lower cost . . . for you! This is the philosophy of an abrasive wheel maker. Though making quality products, it stresses importance of service and help to customers. Without the latter "we'd be running a supermarket full of grinding wheels," says the firm in a new mailing piece. (Bay State Abrasive Products Co.)

For free copy circle No. 24 on postcard

Corrugated Sheet

Deep corrugation steel sheets can support greater loads than standard corrugated sheets. So states a new publication. It also tells how they cut costs, reduce weight and save purlins. (Armco Steel Corp.)

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Tractors

Choosing equipment that's the right size for the job is discussed in an 8-page booklet. Pointing out wasted power is wasted profit, it explains advantages of a line of tractors. (Caterpillar Tractor Co.)

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Chain Drives

Anyone using or planning to use sprockets or roller chain drives may be interested in an 8-page catalog. It covers a line of roller chain drives. (Maurey Mfg. Corp.)

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Air, Gas Blowers

Compact rotary blowers are presented in a bulletin. The blowers

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 10/2/58

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FREE LITERATURE

feature a vertical arrangement of their impellers. This provides horizontal inlet and discharge connections. Result: substantial floor space savings. They handle air and gas. (Roots - Connersville Blower Div., Dresser Industries, Inc.)

For free copy circle No. 25 on postcard

Circuit Breakers

Low voltage power circuit breakers are described in a 20-page bulletin. These low voltage breakers handle circuits up to 600-v ac and 250-v dc. (General Electric Co.)

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Pyrometer

A new type optical pyrometer is designed particularly for precision temperature measurements in the laboratory. Yet it's sufficiently portable for general plant application. A catalog illustrates and describes the instrument. (Pyrometer Instrument Co.)

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Oil Conditioner

Facts about a new oil conditioning system appear in a 12-page brochure. The system removes contaminants from all common oils to 5000 SSU. It removes water in all forms together with dissolved air and gases. Its vacuum process is said to cost less than centrifuging (Bowser Mfg. Co.)

For free copy circle No. 31 on postcard

Cutting Trends

First issue of a new quarterly called "Cutting Trends" is out. It discusses late trends and advances in grinding wheels, shear blades and machine knives. (Simonds Worden White Co.)

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Phosphating

Development of a phosphating material is announced in new literature. This material provides a tight bond for paint, other organic fin-

ishes and metal drawing. It deposits a zinc phosphate coating on iron, steel, zinc and cadmium of up to 400 milligrams per sq ft. (Turco Products, Inc.)

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Oven Sections

Infra-red oven sections for batch-type baking, drying or product heating are introduced in a folder. These oven sections can be mounted in contoured combinations for continuous conveyor-line applications. Or they can come as complete portable ovens. (Safety Industries, Inc.)

For free copy circle No. 34 on postcard

Press Brakes

Press brakes are subjects of a bulletin. It gives data on all machines, dimensions and force required to bend mild steel with standard dies. This line of equipment was formerly manufactured by Struthers-Wells Corp. (Taylor-Winfield Corp.)

For free copy circle No. 35 on postcard

Molded Packings

Just published is a 12-page catalog of molded packings. These sealing devices fit pneumatic and hydraulic equipment. (Johns-Manville.)

For free copy circle No. 36 on postcard

School Building

With school construction booming, a new booklet injects a note of caution. Cost-cutting in material may cause unexpected maintenance and replacement. In the long run this can cost plenty. Irate taxpayers often fail to realize the biggest share of their tax dollar goes for current operating expenses . . . not for new construction. In addition, the 8-page booklet, contains a list of 140 schools, their architects and engineers, together with typical wrought iron applications ranging from air conditioning to underground piping. (A. M. Byers Co.)

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New Production Ideas

Equipment, Methods and Services

Gage Measures Three Different Size Pieces

With this multi-dimension gage, one operator inspects three different sizes of diesel engine crankshafts. These pieces have as many as 47 dimensions to be checked. Two sets of interchangeable adjustable plate-type tooling together with hand-type pneumatic snaps accommodate the three crankshaft sizes. Acceptable dimensions or amount of over or undersize instantly show during gaging; position of the floats in the

34 column instrument indicate these. As long as the floats are within minimum and maximum tolerance lines encribed on the plastic chart on the instrument's face, the part is good. However, if it doesn't, the unit indicates out-of-tolerance dimensions. As an example of its efficiency, it checks five main bearing diameters at two places each for taper, hourglass, out-of-round and size. (The Sheffield Corp.)

For more data circle No. 38 on postcard, p. 101

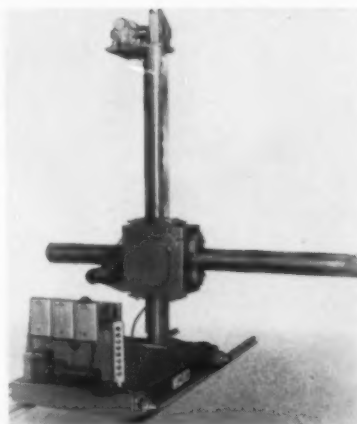


Mobile Unit Carries Welding Head, Power Source

Designed to handle a full automatic welding head, a new economy model manipulator comes in two standard sizes. It's currently available on three series of one firm's welding equipment line. One size has a 6-ft vertical arc height and 6-ft horizontal boom travel; another has 8-ft vertical arc height and 8-ft horizontal boom travel. Powerized elevation with a brake motor, constant speed, pushbutton controls and 360° manual column

rotation is standard on both sizes. Either can come with a stationary base, manual or powered variable speed boom and car travel. The welding power source is carried on the travel car. This operates on a 36-in. gage track. Variable speed drive for the boom and car can run zero to 120 ipm, or in the 20:1 speed range. All car and boom movements can be completely powerized. (Pandjiris Weldment Co.)

For more data circle No. 39 on postcard, p. 101



Steel Angle Stock Contains Precision Holes

Of cold rolled, galvanized steel, a new framing angle material boasts a precision recurring pattern of slots and holes. These, of course, mean metal frames can be assembled quickly and easily, resulting in strong, rigid structures. The material provides for a wide variety of frames which can be built without welding or drilling. Special skills and tools are unnecessary. Finished structures can serve maintenance, storage, materials handling, ship-

ping or construction needs. The slot and hole pattern permits forming of two type joints. Friction type joints result from bolting through vertical and horizontal slots. Where load factors require maximum joint strength and structural rigidity, lock-joints are formed by bolting through the round holes. Packages of the angle also contain 3/8-in. bolts. These have 2000-lb capacity. (Acme Steel Co.)

For more data circle No. 40 on postcard, p. 101



NEW EQUIPMENT

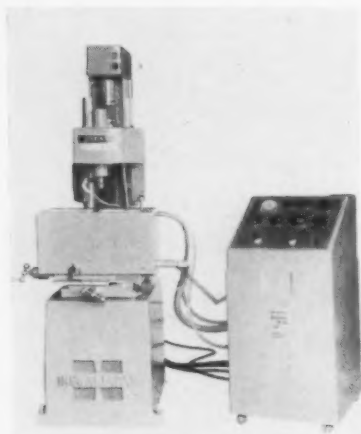


Drum Vacuum Cleaner Fits Metal Shop Needs

A manufacturer of metalworking equipment has just introduced a drum type vacuum cleaner which fits shop needs. The heavy-duty cleaner gets rid of dirt, dust, chips, etc., from the shop floor and puts them where they can be processed for recovery of worthwhile materials. It attaches to any standard open-head 55-gal drum. Pick-up capacity thus is 48 gal dry or 40 gal wet. It's powered by a special 1¼-hp vacuum cleaner motor made

by the manufacturer itself. Sealed against dirt and water, this motor drives a two-stage turbine-type centrifugal fan. The drum vacuum cleaner is said to cut emptying time up to four times over some other cleaners. It can be easily fitted with any of the firm's complete line of vacuum cleaner attachments. An accessory steel dolly is also available; this makes the setup mobile. (The Black & Decker Mfg. Co.)

For more data circle No. 41 on postcard, p. 101

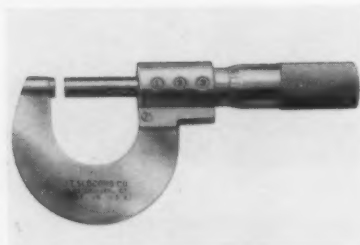


Spark Discharge Machine Runs Long Unattended

Machining even the hardest metals and carbides, this electrical spark discharge unit works automatically. It will run unattended for hours, performing extremely difficult metal removal tasks. The automatic machine is very compact. Occupying just 16 sq ft of floor area, the precision unit machines any metal equally well with remarkable accuracy. It meets National Machine Tool Builders Assn. specifications. Machines like this one are of par-

ticular value in working high-hardness materials. Some typical jobs: making complex holes while repairing forging dies; cutting-off steels which are now done by costly, hard to perform mechanical methods; profiling hard metal plates and grinding milling cutters; creating chip-breaker grooves in hard metal-cutting tools; removing broken taps, drills, etc. from expensive precision workpieces. (Japax America Corp.)

For more data circle No. 42 on postcard, p. 101

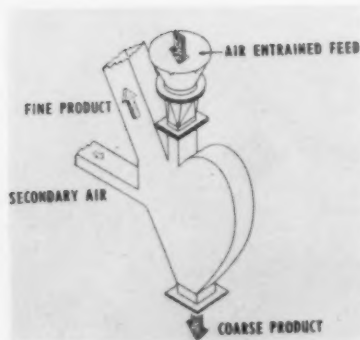


Micrometer Permits Quick, Direct Readings

Simple to use, a new direct-reading micrometer can speed up precision measuring and checking of workpieces. Its user reads the micrometer via a counter-type dial; this means he doesn't have to cal-

culate readings. Produced by a firm which makes several hundred types of micrometers, this tool is said by its maker to reduce errors and consequent waste. (J. T. Slocomb Co.)

For more data circle No. 43 on postcard, p. 101



Classifier Separates Materials By Two Methods

A new "gravitational-inertial" classifier combines two aerodynamic forces to obtain very high operating efficiencies. In a typical setup, for example, an initial field installation correctly classifies better than 95 pct of the feed material. The classifier has no moving parts. It requires virtually no maintenance and has low power requirements.

Compact in arrangement, a 30-ton-per-hour unit requires no more space than an office desk. It operates under all temperature conditions, adapts to virtually any layout arrangement. It's available in sizes to handle from 100 lb to 100 ton of material per hour. (Buell Engineering Co., Inc.)

For more data circle No. 44 on postcard, p. 101



ELECTRIC FURNACE STEEL CASTINGS

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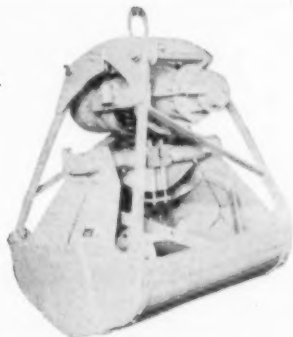
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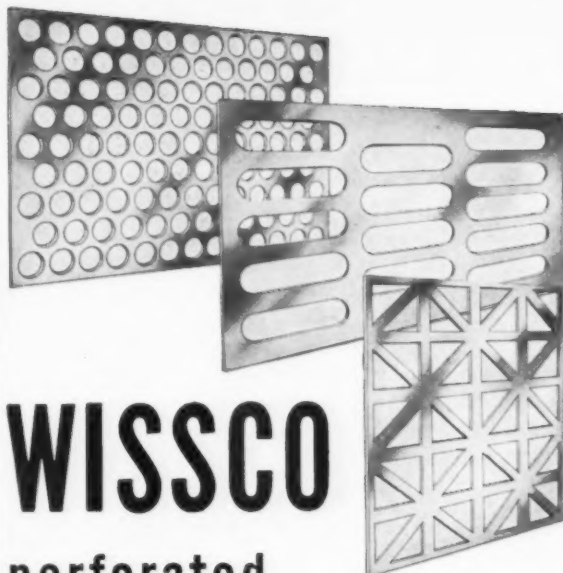
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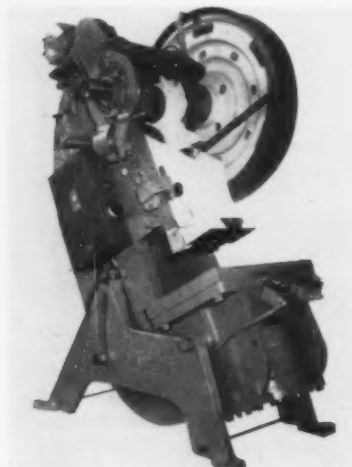


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PERFORATED METALS
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NEW EQUIPMENT

OBI Presses

Two new open-back inclinable presses are 75 and 90-ton capacity units. Developed for high-speed production of small stampings, the presses eject parts completely by gravity when inclined. They have wide-open accessibility for maintenance, service and die changing. Stress-relieved fabricated steel frames reduce deflection so that 50 pct more parts can be produced before dies require re-working, says its maker. Air friction, disc-type clutches operate at low crankshaft speed rather than high drive-shaft speed. This minimizes wear



and heat generation. Band-type air releasing brakes reduce wasted cycle time to provide high overall production speeds. Maximum operating speed is 40 strokes per minute in the geared version and 90 spm in the non-geared. (Hamilton Div., Baldwin-Lima-Hamilton Corp.)

For more data circle No. 45 on postcard, p. 101

Fork Trucks

With the growing trend toward simplification of equipment in mind, a fork-lift truck maker has developed its new line of gas powered, electric driven fork lift trucks. The trucks boast high operating efficiency, low cost of operation and safety features. The gas engine transmits power through a

variable-voltage generator to a matched dc series wound electric drive motor. These form a synchronized power package which



supplies instant power at the touch of the accelerator. This efficient setup is said to save as high as 30 pct on fuel costs. Capacities range from 4000 to 10,000 lb; lift heights suit all applications. (Automatic Transportation Co.)

For more data circle No. 46 on postcard, p. 101

Slow Drilling

Now available is a slow-speed attachment which allows jobs requiring slow speeds and positive drive on a 20-in. drill press. Previously available only to fit a 17-in. drill press, it provides smooth, high torque, power transmission for a variety of common operations. Samples: spot-facing, reaming, counter-boring, core drilling, and cutting wooden plugs. (Delta Power Tool Div., Rockwell Mfg. Co.)

For more data circle No. 47 on postcard, p. 101

Box Furnace

Extremely high, automatically controlled temperatures in a protective atmosphere are provided by a new box furnace. The double-end, through-type laboratory furnace handles copper and silver brazing, metallic oxide reduction, melting, powdered metal sintering and bright annealing. (General Electric Co.)

For more data circle No. 48 on postcard, p. 101

Coil Winder

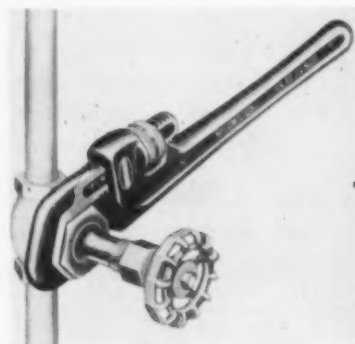
Completely enclosed in a cast iron tank to make a compact, leak-

proof unit, new winder drives can fit either existing windup stands or they can come with a complete new winder unit. A single unit of this type winds many kinds, widths, and thicknesses of materials at various constant tensions, linear speeds and roll build-ups. (Sealot Winders, Inc.)

For more data circle No. 49 on postcard, p. 101

Hex Wrench

This hex wrench has an adjustable four-sided jaw that's easy to put on or take off. Angular jaw design gives leverage plus a positive grip on hex nuts, square nuts, valve packing nuts, unions and gas cocks,



rough or finished. Narrow jaws make work easy in tight places. Sizes include: No. 11 for 3/8 to 3/4-in., No. 17 for 5/8 to 1 1/4-in. and No. 25 for 1 to 2-in. nuts. (Ridge Tool Co.)

For more data circle No. 50 on postcard, p. 101

Radiation Gage

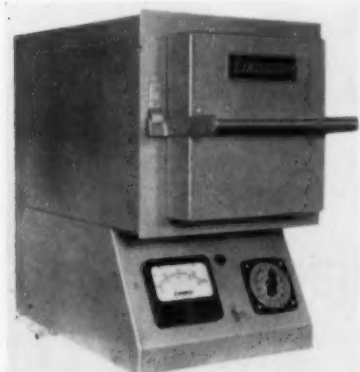
An entirely new non-contacting gage continuously measures thickness and density of materials through the use of gamma radiation. It can help control quality of materials such as steel plate, light gage metals, even steel more than a foot thick. (Nuclear Systems Div., The Budd Co.)

For more data circle No. 51 on postcard, p. 101

Lab Furnace

Compact and self-contained, a new box furnace is for laboratory use. Ash determinations, fusions, ignitions, assaying, drying precipitates and heat treating small

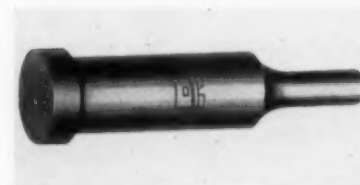
parts are but a few of the many duties it performs. Maximum operating temperature of 1850°F is reached within 70 minutes.



Effective work chamber size is 4-in. wide, 3 $\frac{3}{8}$ -in high and 10-in. deep. (Lindberg Engineering Co.)
For more data circle No. 52 on postcard, p. 101

Punches

Heavy-duty solid head type punches are now available. They come in two grades of high quality tool steels in round, square, oblong



or rectangular points. Odd shapes can be furnished to specification ground on latest optical equipment. (Ring Punch & Die, Inc.)

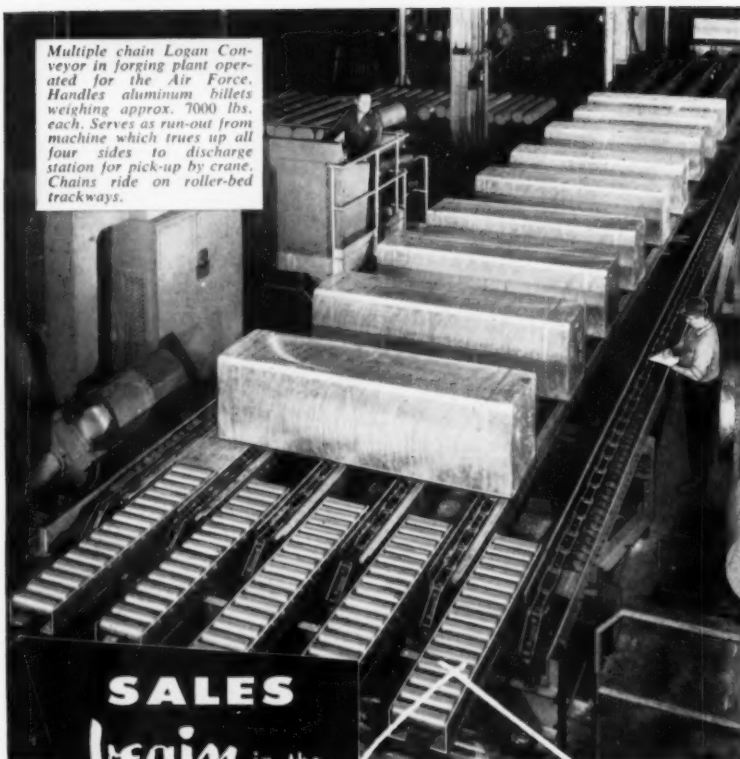
For more data circle No. 53 on postcard, p. 101

Marking Stencil

Electrochemical process stencils are available for marking hard metals. Unlike some other stencils used with this method, this same stencil can be used again and again. A white etch or black mark can be placed quickly on hard metal surfaces, using either ac or dc power. Safe, permanent, distinct markings are easily made on hard metals such as carbides, stainless steels, titanium alloys and on fine chrome or nickel finishes. Surface structure of metals is unaffected. (The Electromark Corp.)

For more data circle No. 54 on postcard, p. 101

Multiple chain Logan Conveyor in forging plant operated for the Air Force. Handles aluminum billets weighing approx. 7000 lbs. each. Serves as run-out from machine which trues up all four sides to discharge station for pick-up by crane. Chains ride on roller-bed trackways.



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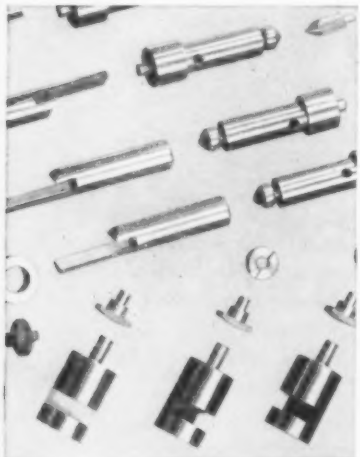
JALCASE 100

improved high-strength, stress-stabilized,
wear-resistant, cold drawn bar steel

Jalcase steels are no novelty—J&L has been producing ten cold-finished grades for years—but a free machining steel with the properties of Jalcase 100 is new. This improved steel has a higher level of wear-resisting hardness than previously available and a favorable balance of other desirable cost-reducing in-the-bar properties.

Three principal features of the new Jalcase 100 are:

1. A guaranteed minimum yield strength of 105,000 pounds per square inch (psi) in round bar sizes up to and including 1½-



Warpage problems requiring straightening after machining are minimized by the use of Jalcase 100. Balanced residual stresses have been achieved by an advanced cold drawing process.

inch diameters, and 100,000 psi in sizes over 1½-inch through 3½-inch diameters.

2. Guaranteed minimum hardness of 248 Brinnell in sizes up to 1½-inch inclusive and 241 Brinnell for larger sizes.
3. Stabilized residual stresses to reduce after-machining distortion problems.

The increased hardness of this new steel means dependable wear resistance for finished parts. In addition, while Jalcase 100 can readily be surface-hardened when necessary, its extra strength and hardness are sufficient to eliminate any need for subsequent heat treatment of parts for many applications. This can mean substantial savings.

The stabilized—or balanced—residual stresses of Jalcase 100 are especially important to automatic screw machine operators and others who need stable free machining bars with a maximum resistance to distortion after machining operations. Key slots in shafts, for example, need no longer be a major source of trouble.

Jalcase 100 has a chemical analysis equivalent to Jalcase 9 and 10 (AISI C-1144), and is a free-machining steel. In fact, one major user has already reported a machinability index of 82%, a rating relative to the low carbon free-cutting grade B-1112 at 100%.

J&L technical consultants are available to discuss the applicability of Jalcase 100 to your specific production needs. If you're interested in a more uniformly hard steel, with higher strengths and good machinability—and you wish to avoid the expense of additional heat treatments and problems of distortion—contact your J&L salesman or write to Dept. 403, Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.



Close size accuracy and exceptionally high wear resistance are assured when using Jalcase 100. Production costs can be cut substantially.



Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA

The Iron Age Summary

Steel Upturn on Solid Ground

Steel men see pickup as a grass roots development in the market.

Continued improvement is looked for over balance of the year. Possible seasonal leveling at year-end.

■ The upsurge in steel demand is no flash in the pan. Most steel men are now certain that a grass roots improvement in the market is well underway.

A continued pickup is looked for over balance of the year, although it's conceded there could be a seasonal leveling off at year-end.

Deliveries Are Stretching—There is increasing optimism over the outlook for automotive demand. The conviction is growing that automakers will sell more 1959 models than they did 1958's. And Detroit is showing signs of rebuilding steel inventories, after months of cut-backs.

In some mill areas, cold-rolled sheet delivery promises have

stretched out to five weeks. Selling on the basis of quick delivery is becoming a thing of the past. Salesmen are quoting November delivery on cold-rolled sheets, and landing orders.

Mild Supply Pinch—A mild supply pinch has developed for some appliance plants and others. Reason for this is that the mills have not been able to boost production fast enough for the prompt delivery requirements of some steel users. While any shortage will be temporary, it's another indication of how the market has improved.

Appliance firms are becoming a stronger factor in the market. This is a case of an end to inventory cut-backs plus a pickup in appliance sales.

Rails Firming—Even the rail market is firming up. In the last ten days, some orders for rails have been placed. Fairly substantial freight car orders have come in, and there are signs the railroads are get-

ting ready to step up car repairs.

A mild shortage of freight cars is being felt by steel and aluminum producers. Nothing serious so far, but one traffic man warns that a sudden boost in shipping could bring on a real pinch. At the moment, the railroads have 15 to 20 pct of their cars in poor repair. Last year at this time it was 9 to 11 pct. Truck transportation is still readily available.

Steel Service Centers—Improvement in steel demand is being felt by steel service centers, or warehouses. In the Midwest, they are now receiving bulk orders for hot-rolled sheets as well as galvanized sheet and cold-rolled. The spurt in hot-rolled sheet hit so suddenly that some gages are temporarily hard to come by. Warehouses are projecting a 15 pct gain in total tonnage marketed during October.

Some warehouse customers are placing orders for November delivery, and a few have contracted for spot deliveries as far out as December.

Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	1,856	1,822	1,755	2,125
Ingot Index				
(1947-1949=100)	114.9	112.4	108.2	132.3
Operating Rates				
Chicago	79.0	80.0*	76.0	82.0
Pittsburgh	63.0	60.5*	54.0	85.0
Philadelphia	76.0	73.0	74.0	84.0
Valley	50.0	49.5	49.5	72.5
West	74.0	77.5*	79.5	98.5
Cleveland	70.0	69.0*	48.5	87.0
Buffalo	59.0	59.0	49.0	100.0
Detroit	76.0	67.0*	72.0	96.0
South	54.0	54.0	52.0	72.0
South Ohio River	75.0	75.0*	86.0	78.0
Upper Ohio River	75.0	77.5*	81.5	95.5
St. Louis	91.0	88.0*	69.0	94.0
Aggregate	69.0	67.5	65.0	83.0

*Revised

Prices At a Glance

	This Week	Week Ago	Month Ago	Year Ago
(Cents per lb unless otherwise noted)				
Composite price				
Finished Steel, base	6.196	6.196	6.188	5.967
Pig Iron (gross ton)	\$66.49	\$66.49	\$66.49	\$66.42
Scrap, No. 1 hvy				
(Gross ton)	\$43.50	\$43.17	\$42.83	\$40.83
No. 2 bundles	\$29.17	\$28.83*	\$29.17	\$30.17
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	28.10
Copper, electrolytic	26.50	26.50	26.50	27.00
Lead, St. Louis	10.80	10.80	10.80	13.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	94.25	92.75*	96.00	93.375
Zinc, E. St. Louis	10.00	10.00	10.00	10.00

Scale Sales Weather Recession

Business slump only slowed the growing trend to modernized weighing systems, scale makers believe.

As shipments improve, they predict sales this year may equal or almost equal last year's record levels.

■ Industrial scale sales are shaking off the effects of the recession. The market decline that began last fall ended this spring. During the second quarter scale shipments climbed 18 pct above first quarter levels.

These gains still placed the April-June period this year considerably under the same three months in 1957. But it must be remembered that 1957 sales were the best in history for industrial scales.

Optimists Rule—The recent market upturn has encouraged scale manufacturers. Many surveyed by The IRON AGE are confident sales this year will equal those of 1957. The few who are less optimistic still believe 1958 will be only slightly below 1957 levels.

And when scale makers look at their market for the years beyond 1958 they are truly enthusiastic. They point out that cutbacks in industrial expansion this year only blunted the trend to modernizing weighing systems.

Buyers are still sold on new weighing methods which speed process flow, aid in blending and proportioning materials, and provide important production and accounting records, the scale builders say. As business improves this trend should again pick up speed.

What's Ahead—Scale manufacturers are making sure their products will continue as the focal point in plant control systems. They are designing scales with increased efficiency and versatility.

One manufacturer predicts these coming developments: (1) improved techniques for weighing accuracies never before realized; (2) better automatic handling of packaged items; (3) advances in the instrumentation of electronic weighing systems; and (4) greater research in materials handling for better feeder scale applications.

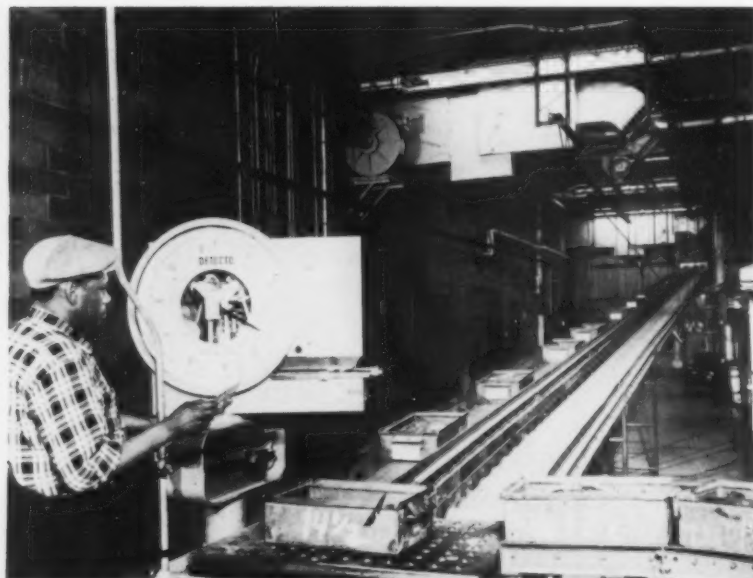
Another scale builder foresees wider use of load cell weighing, automatic batching, and weighing items in motion by conveyor scales.

Delivery Schedules—Scale buyers will find the current market to their liking. Right now they can count on two things: Good deliveries and steady prices. While manufacturer backlogs are beginning to extend, customers can still get rapid shipment on most orders.

Here are some delivery estimates on specific products as quoted by scale makers: Hanging scales, platform scales, and instrument scales—1 to 2 weeks maximum; feeder scales—4 to 6 weeks; packaging scales—1 to 2 weeks if standard, specialized equipment in 2-3 months.

Motor truck scales—2 to 6 weeks; railroad track scales—12 weeks; automatic batching scales—6 to 8 weeks; and electronic proportioning scales—3 to 6 months.

Price Hikes Unlikely—There's little chance for price increases during 1958, most scale makers say. Only a few scale suppliers believe higher prices are coming. Majority opinion: Prices will hold steady at least through this year.



RIGHT ON THE LINE: Weighing materials in transit aids manufacturers and is a growing sales area for industrial scale makers. This application is in Parker-Kalon Plant Div. of General American Transportation Co., Clifton, New Jersey. (Photo from Deteco Scales, Inc.)

SEMI-CONDUCTOR RECTIFIER



Two 100-kw, 250-volt silicon rectifiers installed in industrial service. Semi-conductor rectifiers are simple in operation and maintenance, require little floor space.



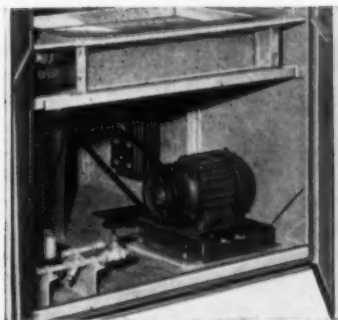
Only application experience like this can give you highest conversion efficiency

High power conversion efficiency at low cost is the major advantage of the semi-conductor rectifier. But this high efficiency — as high as 95% — can be obtained only when the unit is *correctly applied*.

Allis-Chalmers 30 years of experience in developing, manufacturing and *applying* rectifiers assures you of the highest conversion efficiency. This background of experience, plus vast research and engineering facilities, is available for a thorough analysis of your requirements. Then,

specific, unbiased equipment recommendations are made — dictated solely by your requirements — because Allis-Chalmers makes all types of rectifiers.

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Effective cooling — closed recirculating air system features air-to-water heat exchange and delivers same amount of cooling air to each diode. Air is sealed in. Direct air cooling system also available.



ALLIS-CHALMERS

A-5817

East Coast Tinplate Differential Fades

U. S. Steel likely to follow Bethlehem in scrapping price difference between Eastern and inland tinmills.

In other price moves, producers take back \$15 a ton advance in core wire, boost refractories and ferroalloys.

■ U. S. Steel Corp. is expected to follow the lead of Bethlehem Steel in wiping out the existing price differential of 10¢ per base box between eastern and inland producers of tin mill products.

Bethlehem last week announced that it was raising its Sparrows Point tin mill prices 25¢ per base box, effective Nov. 1. U. S. Steel had earlier announced an increase of 35¢ per base box, maintaining the traditional 10¢ premium between east and inland points.

Bethlehem's new price for electrolytic tinplate, for example, is \$9.10 per base box, the same as that announced by inland mills. U. S. Steel's announced new price for Fairless is \$9.20. Thus it would seem that U. S. Steel will have to drop its Fairless prices in order to remain competitive with Bethlehem.

Bethlehem would not comment on the reason behind its move. But trade sources pointed out that Bethlehem has been competing for tinplate business on the West Coast, where U. S. Steel's Columbia-Geneva Div. raised prices only 25¢ per base box, compared with 35¢ elsewhere.

The Bethlehem and Columbia-Geneva price actions mean inland mills will have to absorb more freight if they want to sell in either eastern or western markets.

Core Wire Reduction—Also last week Detroit Steel, and others, restored a base price of \$12.65 a hundredweight on aluminum cable galvanized core wire. This rolled the price back to previous levels, canceling out an increase of \$15 a ton announced in August.

The August increase was made to offset higher labor costs, according to V. R. Bates, Detroit's vice president of sales. But, he added, it was discarded in "a move to meet more vigorously the growing competitive inroads of foreign sellers." A similar price roll back was announced by John A. Roebling Sons, American Steel & Wire, and Jones & Laughlin.

Refractory Prices Up—Chrome brick and magnesite refractory prices went up Oct. 1.

Ferroalloy Changes—Price adjustments, some meaning increases and some decreases, were made effective Oct. 1 on some ferroalloy products by the Electromet Div. of Union Carbide Corp. New base prices were announced for silicon metal, magnesium-ferrosilicon, fer-

romanganese-silicon, all grades of ferrosilicon, and certain ferrochrome alloys.

Sheet and Strip—Sheet orders are building up at both the mill and warehouse level. Barring a breakdown in auto labor negotiations, sheet producers look for peak shipments in October and November. Some buyers, including auto plants, are adding five days' inventory to their stocks. Appliance producers, with sales increasing, are running into a mild pinch in sheet supplies.

Meanwhile, galvanized sheets are rapidly joining the list of "most wanted" steel products. With deliveries running as much as three weeks beyond promises, users are having difficulties.

Plates and Shapes—October orders for both products are coming in a little earlier than they have before. But buyers still order late and count on quick delivery. Mill tonnages are improving.

Bars—Mill shipments are increasing but more slowly than in sheets. A **Pittsburgh** producer says deliveries for both hot-rolled and cold-finished bar could lengthen very soon. But mills there are still offering 1-2 week delivery on hot rolled. In some cases they can make shipment in as little as 10 days.

In the **Midwest**, however, both hot-rolled and cold-finished bar deliveries are already extended.

Wire Products—Sales gains for most wire items are encouraging suppliers. Both merchant wire and manufacturer's wire are showing order improvement. A seasonal second wind is aiding merchant wire sales. Automotive orders are sparking an upturn in sales of manufacturer's wire.

Many **Chicago** mills have exceeded their September shipping estimates. For some a tonnage carry-over could develop during October. In the **Midwest** high carbon wire for October delivery is already booked above September levels. Low carbon wire for industrial use is also improving, but at a slower pace.

PURCHASING AGENT'S CHECKLIST

Interest costs on business loans could hit new peak in the last quarter. **P. 44**

Russia may pay stiff price for recent dumping of tin in Free World market. **P. 47**

Industrial costs will go up in new round of inflation, Washington officials state. **P. 61**

COMPARISON OF PRICES

(Effective Sept. 30, 1958)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	Sept. 30 1958	Sept. 23 1958	Sept. 2 1958	Oct. 1 1957
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	4.925¢
Cold-rolled sheets	6.275	6.275	6.275	6.05
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.60
Hot-rolled strip	5.10	5.10	5.10	4.925
Cold-rolled strip	7.425	7.425	7.425	7.17
Plate	5.30	5.30	5.30*	5.12
Plates, wrought iron	13.55	13.55	13.55	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	\$10.30	\$10.30	\$10.30	\$10.30
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	9.00
Special coated mfg. ternes	9.55	9.55	9.55	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.425¢
Cold finished bar	7.65	7.65	7.65	7.30
Alloy bars	6.725	6.725	6.725	6.475
Structural shapes	5.50	5.50	5.50	5.275
Stainless bars (No. 302)	45.00	45.00	45.00	45.00
Wrought iron bars	14.90	14.90	14.90	14.45
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	7.65¢
Rails: (per 100 lb.)				
Heavy rails	\$5.75	\$5.75	\$5.525	\$5.525
Light rails	6.725	6.725	6.50	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	\$80.00	\$80.00	\$80.00	\$77.50
Slabs, rerolling	80.00	80.00	80.00	77.50
Forging billets	99.50	99.50	99.50	96.00
Alloy blooms, billets, slabs	119.00	119.00	119.00	114.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.15¢
Skelp	5.05	5.05	5.05	4.875
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.188¢	5.967¢

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	Sept. 30 1958	Sept. 23 1958	Sept. 2 1958	Oct. 1 1957
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	\$70.97	\$70.97	\$70.97	\$70.51
Foundry, Valley	66.50	66.50	66.50	66.50
Foundry, Southern Cin'ti	73.87	73.87	73.87	71.65
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.47	70.47	70.47	70.01
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese 74-76 pct Mn.	12.25	12.25	12.25	12.25
cents per lb†				
Pig Iron Composite: (per gross ton)				
Pig iron	\$66.49	\$66.49	\$66.49	\$66.42
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	\$44.50	\$44.50	\$44.50	\$41.50
No. 1 steel, Phila. area	41.50	39.50	39.50	40.50
No. 1 steel, Chicago	44.50	45.50	44.50	40.50
No. 1 bundles, Detroit	32.50	36.50	37.50	31.50
Low phos., Youngstown	45.50	45.50	46.50	44.00
No. 1 mach'y cast, Pittsburgh	51.50	51.50	51.50	54.50
No. 1 mach'y cast, Phila.	49.50	49.50	49.50	52.50
No. 1 mach'y cast, Chicago	53.50	53.50	53.50	44.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	\$43.50	\$43.17	\$42.83	\$40.83
No. 2 bundles	29.17	28.83*	29.17	30.17
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	\$14.50	\$14.50	\$14.50	\$15.38
Foundry coke, prompt	\$18-18.50	\$18-18.50	\$18-18.50	\$17.50-19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	26.50	26.50	26.50	27.00
Copper, Lake, Conn.	26.50	26.50	26.50	27.00
Tin, Straits, N. Y.	94.25†	92.75*	96.00	93.375
Zinc, East St. Louis	10.00	10.00	10.00	10.00
Lead, St. Louis	10.80	10.80	10.80	13.80
Aluminum, virgin ingot	26.80	26.80	26.80	25.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	33.00

† Tentative. ‡ Average. * Revised.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

INDEX TO PRICE PAGES

Prices At a Glance	109
Comparison of Prices	113
Bars	122
Billets, Blooms and Slabs	120
Boiler Tubes	124
Bolts, Nuts, Rivets, Screws	125
Clad Steel	124
Coke	124
Electrical Sheets	124
Electrodes	124
Electroplating Supplies	125
Ferroalloys	127
Iron Ore	124
Merchant Wire Products	124
Metal Powders	125
Nonferrous	
Mill Products	119
Primary Prices	113-118-119
Remelted Metals	119
Scrap	119
Piling	120
Pig Iron	126
Pipe and Tubing	123
Plates	122
Rails	124
Refractories	124
Service Center Prices	125
Shapes	120
Sheets	121
Spring Steel	124
Stainless	126
Steel Scrap	116
Strip	120
Structurals	120
Tinplate	121
Tool Steel	124
Track Supplies	124
Water Pipe Index	125
Wire	122
Wire Rod	121

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Weak Market Fails To Curb Optimism

BULLETIN

On the basis of a sale, No. 1 Heavy Melting Steel rose \$2 to \$41.42 per ton in Philadelphia. As a result, The IRON AGE Composite price rose to \$43.50 per ton.

■ The long-looked-for upsurge in steel scrap demand is yet to come.

Just when dealers in many areas were expecting mills to enter the market, industrial scrap was unloaded, undercutting dealer prices from \$1 to \$3. Here and there an idle blast furnace is being lighted up as the steel operating rate slowly picks up—putting pig iron competition back into the picture.

One eastern broker interprets the readiness with which mills put their blast furnaces into operation as a "growing pattern to avoid being pressured into paying fancy prices for scrap."

In spite of these setbacks, there remains a healthy undercurrent of optimism among dealers regarding fourth quarter prospects. Mill operating rates are approaching a point where they will have to come into the market for material.

On the basis of early factory lists, prices of dealer openhearth grades were forced down \$1 in Chicago, dropping The IRON AGE No. 1 heavy melting Composite Price 33¢ to \$42.83.

Last week, the No. 2 bundles Composite Price was \$28.83, instead of \$29.17 as reported. The lower composite was based on a \$1 drop in the Pittsburgh market. This week however, the Pittsburgh market regained the dollar, and the

No. 2 bundles Composite returns to \$29.17.

Pittsburgh—The market is firmer and more active this week. No. 2 heavy melting and No. 2 bundles are up \$1 as buying of these grades resumed. Price of No. 1 heavy melting is unchanged but the outlook is for trading at higher levels. Scarcity continues to push up stainless prices. Local industrial bundles went for prices only slightly under last month.

Chicago—In the face of strong mill resistance, prices slipped \$1 on several grades. Brokers, however, were avoiding short sales, suggesting that scrap is difficult to pick up in quantity at existing prices. First lists of factory bundles were off slightly, but a number of major lists had not yet been announced.

Philadelphia—Local steel mills aren't buying scrap but feeling in the trade is that they will start soon. Dealers are worried over continued mill disinterest in No. 2 bundles. The historical differential of \$6 to \$8 in price of bundles and No. 1 heavy melting has increased to \$15 in the past year.

New York—Prices of No. 1 and No. 2 heavy melting dropped \$1 following last week's sharp increase. But brokers regard the decline in the nature of a "technical correction" rather than a reversal of the upward trend. Export is still strong.

Cleveland — Prices of dealer openhearth grades are unchanged as a Valley mill bought No. 1 dealer scrap at \$45—same as its last order.

Electric furnace grades are very firm, reflecting a dependence on scrap rather than hot metal. However, No. 1 factory bundles dropped \$1.50 on the latest list.

St. Louis — Prices realized for No. 1 railroad heavy melting and railroad specialties in lists offered last week were off \$1. Otherwise, scrap prices are unchanged.

Detroit—Tumbling prices for industrial scrap splashed cold water on any hopes dealers may have had for October. An estimated 25,000 tons of No. 1 bundles—some 30-40 pct more than offered in September—sold for an average price of about \$39.50. This is about \$5 less than a month ago. It forced dealer openhearth grades down \$3 to \$4.

Birmingham—The scrap market here seems to have a strong undertone, but with most openhearths and electric furnaces out of the market, it is just an undertone. The cast market, however, realized higher prices on purchases by a large consumer. Export is picking up.

Cincinnati—Price of No. 1 heavy melting dropped \$1, reflecting an easing in competition for industrial scrap.

Buffalo—Prices are unchanged in an inactive market. Dealers feel a new buy would be at quoted prices. The area's biggest mill lighted another blast furnace, dampening hopes somewhat for openhearth scrap demand.

Boston—The market was described as having a firm undertone, but prices this week held unchanged. There was little domestic or export business.

West Coast—Export isn't having any immediate effect on prices. Dealers report scrap is scarce. But mill inventories are healthy.

Houston—A district mill bought the largest tonnage of scrap here since last March. It sent the price of openhearth grades up \$1 to \$2. An impending strike in Mexican mills clouds the outlook for export.

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EXPORT SALES: BORG-WARNER INTERNATIONAL CORPORATION, CHICAGO

SCRAP PRICES (Effective Sept. 30, 1958)

Pittsburgh

No. 1 hvy. melting	\$44.00 to \$45.00
No. 2 hvy. melting	33.00 to 34.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	48.00 to 49.00
No. 2 bundles	31.00 to 32.00
No. 1 busheling	44.00 to 45.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	24.00 to 25.00
Low phos. punch's plate	49.00 to 50.00
Heavy turnings	34.00 to 35.00
No. 1 RR hvy. melting	48.00 to 49.00
Scrap rails, random lgth.	54.00 to 55.00
Rails 2 ft and under	57.00 to 58.00
RR specialties	52.00 to 53.00
No. 1 machinery cast.	51.00 to 52.00
Cupola cast.	44.00 to 45.00
Heavy breakable cast.	42.00 to 43.00
Stainless	
18-8 bundles and solids	225.00 to 230.00
18-8 turnings	120.00 to 125.00
430 bundles and solids	125.00 to 130.00
410 turnings	60.00 to 60.00

Chicago

No. 1 hvy. melting	\$44.00 to \$45.00
No. 2 hvy. melting	38.00 to 39.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	49.00 to 50.00
No. 2 bundles	31.00 to 32.00
No. 1 busheling	44.00 to 45.00
Machine shop turn.	23.00 to 24.00
Mixed bor. and turn.	24.00 to 25.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	25.00 to 26.00
Low phos. forge crops	53.00 to 54.00
Low phos. punch's plate	50.00 to 51.00
Low phos. 3 ft and under	48.00 to 49.00
No. 1 RR hvy. melting	49.00 to 50.00
Scrap rails, random lgth.	54.00 to 55.00
Rolling rails	66.00 to 67.00
Rails 2 ft and under	60.00 to 61.00
Angles and splice bars	56.00 to 57.00
RR steel bar axles	71.00 to 72.00
RR couplers and knuckles	53.00 to 54.00
No. 1 machinery cast.	53.00 to 54.00
Cupola cast.	47.00 to 48.00
Heavy breakable cast.	41.00 to 42.00
Cast iron wheels	41.00 to 42.00
Malleable	57.00 to 58.00
Stove plate	44.00 to 45.00
Steel car wheels	52.00 to 53.00
Stainless	
18-8 bundles and solids	215.00 to 220.00
18-8 turnings	125.00 to 130.00
430 bundles and solids	115.00 to 120.00
430 turnings	70.00 to 75.00

Philadelphia Area

No. 1 hvy. melting	\$41.00 to \$42.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	41.00 to 42.00
No. 2 bundles	24.00 to 25.00
No. 1 busheling	41.00 to 42.00
Machine shop turn.	20.00 to 21.00
Mixed bor. and turn.	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Shoveling turnings	23.00 to 24.00
Clean cast. chem. borings	30.00 to 31.00
Low phos. 5 ft and under	43.00 to 44.00
Low phos. 2 ft, punch's	44.00 to 45.00
Elec. furnace bundles	41.00 to 42.00
Heavy turnings	34.00 to 35.00
RR specialties	47.00 to 48.00
Rails 18 in. and under	57.00 to 58.00
Cupola cast.	40.00 to 41.00
Heavy breakable cast.	43.00 to 44.00
Cast iron car wheels	44.00 to 45.00
Malleable	56.00 to 57.00
No. 1 machinery cast.	49.00 to 50.00

Cincinnati

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$38.50 to \$39.50
No. 2 hvy. melting	32.50 to 33.50
No. 1 dealer bundles	38.50 to 39.50
No. 2 bundles	25.00 to 26.00
Machine shop turn.	18.00 to 19.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	17.00 to 18.00
Low phos. 18 in. and under	45.00 to 46.00
Rails, random length	48.00 to 49.00
Rails, 18 in. and under	55.00 to 56.00
No. 1 cupola cast.	42.00 to 43.00
Hvy. breakable cast.	36.00 to 37.00
Drop broken cast.	47.00 to 48.00

Youngstown

No. 1 hvy. melting	\$44.00 to \$45.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	44.00 to 45.00
No. 2 bundles	29.00 to 30.00
Machine shop turn.	23.50 to 24.50
Shoveling turnings	24.50 to 25.50
Low phos. plate	45.00 to 46.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	\$40.50 to \$41.50
No. 2 hvy. melting	32.50 to 33.50
No. 1 dealer bundles	40.50 to 41.50
No. 1 factory bundles	43.50 to 44.50
No. 2 bundles	27.50 to 28.50
No. 1 busheling	40.50 to 41.50
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Cut structural & plates, 2 ft & under	46.00 to 47.00
Drop forge flashings	40.50 to 41.50
Low phos. punch's plate	41.50 to 42.50
Foundry steel, 2 ft & under	40.00 to 41.00
No. 1 RR hvy. melting	47.00 to 48.00
Rails 2 ft and under	56.00 to 57.00
Rails 18 in. and under	57.00 to 58.00
Steel axle turnings	25.00 to 26.00
Railroad cast.	49.00 to 50.00
No. 1 machinery cast.	48.00 to 49.00
Stove plate	44.00 to 45.00
Malleable	61.00 to 62.00
Stainless	
18-8 bundles	220.00 to 225.00
18-8 turnings	115.00 to 120.00
430 bundles	120.00 to 125.00

Buffalo

No. 1 hvy. melting	\$36.00 to \$37.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 busheling	36.00 to 37.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	27.00 to 28.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	16.00 to 17.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	45.00 to 46.00
Scrap rails, random lgth.	47.00 to 48.00
Rails 2 ft and under	59.00 to 60.00
No. 1 machinery cast.	48.00 to 49.00
No. 1 cupola cast.	44.00 to 45.00

St. Louis

No. 1 hvy. melting	\$38.00 to \$39.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	29.00 to 30.00
Machine shop turn.	16.00 to 17.00
Shoveling turnings	18.00 to 19.00
No. 1 RR hvy. melting	45.00 to 46.00
Rails, random lengths	48.00 to 49.00
Rails, 18 in. and under	53.00 to 54.00
Angles and splice bars	46.00 to 47.00
RR specialties	46.00 to 47.00
Cupola cast.	48.00 to 49.00
Heavy breakable cast.	38.00 to 39.00
Cast iron brake shoes	38.00 to 39.00
Stove plate	42.00 to 43.00
Cast iron car wheels	40.00 to 41.00
Rolling rails	60.00 to 61.00
Unstripped motor blocks	39.00 to 40.00

Birmingham

No. 1 hvy. melting	\$35.00 to \$36.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	35.00 to 36.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	35.00 to 36.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	12.00 to 13.00
Electric furnace bundles	39.00 to 40.00
Elec. furnace, 3 ft & under	37.00 to 38.00
Bar crops and plate	45.00 to 46.00
Structural and plate, 2 ft.	44.00 to 45.00
No. 1 RR hvy. melting	39.00 to 40.00
Scrap rails, random lgth.	47.00 to 48.00
Rails, 18 in. and under	52.00 to 53.00
Angles & Splice bars	47.00 to 48.00
Rolling rails	59.00 to 60.00
No. 1 cupola cast.	54.00 to 55.00
Stove plate	53.00 to 54.00
Cast iron car wheels	43.00 to 44.00
Unstripped motor blocks	43.00 to 44.00

New York

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$32.00 to \$33.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	19.00 to 20.00
Machine shop turnings	10.00 to 11.00
Mixed bor. and turn.	12.00 to 13.00
Shoveling turnings	13.00 to 14.00
Clean cast. chem. borings	24.00 to 25.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	36.00 to 37.00
Heavy breakable cast.	34.00 to 35.00
Stainless	
18-8 prepared solids	180.00 to 185.00
18-8 turnings	80.00 to 85.00
430 prepared solids	70.00 to 75.00

Detroit

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$31.00 to \$32.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 dealer bundles	32.00 to 33.00
No. 2 bundles	20.00 to 21.00
No. 1 busheling	31.00 to 32.00
Drop forge flashings	30.00 to 31.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Heavy breakable cast.	30.00 to 31.00
Mixed cupola cast.	35.00 to 36.00
Automotive cast.	43.00 to 44.00
Stainless	
18-8 bundles and solids	200.00 to 205.00
18-8 turnings	95.00 to 100.00
430 bundles and solids	105.00 to 110.00

Boston

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$28.00 to \$29.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 dealer bundles	28.00 to 29.00
No. 2 bundles	17.00 to 18.00
No. 1 busheling	28.00 to 29.00
Machine shop turn.	9.00 to 10.00
Shoveling turnings	12.00 to 13.00
Clean cast. chem. borings	19.00 to 20.00
No. 1 machinery cast.	32.00 to 33.00
Mixed cupola cast.	32.00 to 33.00
Heavy breakable cast.	30.00 to 31.00
Stove plate	31.00 to 32.00

San Francisco

No. 1 hvy. melting	\$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn.	15.00
Cast iron borings	15.00
No. 1 cupola cast.	45.00

Los Angeles

No. 1 hvy. melting	\$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	\$27.00 to 28.00
No. 2 bundles	17.00
Machine shop turn.	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Elec. turn 1 ft and under (foundry)	43.00
No. 1 cupola cast.	42.00

Seattle

No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	28.00
No. 2 bundles	22.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	26.00
No. 1 dealer bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Busheling	20.00
Bush., new fact. prep'd.	30.00
Bush., new fact. unprep'd	24.00
Machine shop turn.	15.00
Short steel turn.	19.00
Mixed bor. and turn.	15.00
Rails, rerolling	39.00
Cast scrap	\$39.00 to 41.00

Houston

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$40.00
No. 2 hvy. melting	34.00
No. 2 bundles	25.00
Machine shop turn.	17.00
Shoveling turnings	20.00
Cut structural plate	
2 ft & under	\$44.00 to 45.00
Unstripped motor blocks	35.00 to 36.00
Cupola cast.	45.00 to 46.00
Heavy breakable cast.	30.00 to 31.00

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Trade Opinion On Lead-Zinc Quotas

Most producers would have preferred higher tariffs.

But they are happy with the quotas, although unsure of how much good they'll do.

Foreign producers solidly against restrictions.

■ No one in the domestic lead-zinc trade is climbing very far out on a limb on how much the restriction on lead and zinc imports will affect U. S. markets.

Beginning at noon yesterday, annual imports of lead and zinc are restricted to 80 pct of the average for the five years from 1953 to 1957. Quotas have been assigned by countries on a traditional basis, and will be administered quarterly, first come, first served.

Problem—The first-come, first-served feature creates an internal problem in foreign countries involved. Unless they control their exports, producers and miners within their borders will be racing for the lion's share of the country's quota, making for a wildly fluctuating market.

One U. S. producer pretty well summed up industry opinion: "We would have preferred a higher tariff. But any port in a storm. At least it is some recognition by government that we do have a problem."

A major buyer of lead is sure the quotas will drive up the price. He also noted that under first come, first served, there could be spans when quarterly quotas would be used up. A sharp upturn in U. S. business would then make the price particularly vulnerable.

Market Firming—Producers agree that quotas are already firming the market. But they say this is not the whole story. Also contributing: Improved business of their customers, low customer inventories, and the generally accepted theory that neither lead nor zinc prices will drop any farther.

Reaction from foreign suppliers of lead and zinc was fast and to the point. The Montreal Gazette quoted Canadian Finance Minister Fleming on the quotas, "deplorable and untimely"; and Australian Trade Minister John McEwen, "ruthless" and "savage."

Foreign Reaction — Canada's Minister of Trade and Commerce Gordon Churchill said the quotas were "basically contrary" to General Agreement on Tariffs and Trade, which aims at liberalizing trade, and to which the U. S. subscribes. However, Mr. Churchill admitted that because of heavier exports to the U. S. in the early years of the base period, the quota for lead assigned to Canada is higher than she shipped here in 1957.

In Peru, Mario Samame Boggio, vice president of the Mining Society, classified the quotas as "economic aggression to our country."

Here are the essentials of the President's Proclamation, and the administrative details:

Import Quotas:

Zinc Metal (per quarter)

Canada	18,920 tons
Benelux	3700 tons
Mexico	3160 tons
Belgium Congo	2720 tons
Peru	1880 tons
Italy	1800 tons

All others 3040 tons

Zinc Ore (per quarter)

Mexico	35,240 tons
Canada	33,240 tons
Peru	17,560 tons
Others	8920 tons

Lead Metal (per quarter)

Mexico	18,440 tons
Australia	11,840 tons
Canada	7960 tons
Yugoslavia	7880 tons
Peru	6440 tons
Others	3040 tons

Lead Ore (per quarter)

Peru	8080 tons
South Africa	7440 tons
Canada	6720 tons
Australia	5040 tons
Bolivia	2520 tons
Others	3280 tons

The U. S. Customs Bureau will administer the program. The quotas apply to lead and zinc content. They do not apply when zinc content is less than 1 pct, or lead less than 2 pct.

Material in transit before Sept. 22 is exempt.

Tin prices for the week: Sept. 24—92.75; Sept. 25—94.25; Sept. 26—94.50; Sept. 29—94.50; Sept. 30—94.25.*

* Estimate.

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.00	26.10	8/1/58
Copper (E)	26.80	26.20-26.50	7/17/58
Copper (CS)	26.00	26.375	9/17/58
Copper (L)	26.80	26.00	7/17/58
Lead, St. L.	10.90	10.55	9/18/58
Lead, N. Y.	11.00	10.75	9/18/58
Magnesium ingot	36.00	34.00	8/13/58
Magnesium pig	36.25	33.75	8/13/58
Nickel	74.00	64.00	12/8/58
Titanium sponge	180-205	200-230	4/1/58
Zinc, E. St. L.	10.00	10.00	7/1/57
Zinc, N. Y.	10.80	11.00	7/1/57

ALUMINUM: 99% ingot frrt allwd. **COPPER:** (E) = electrolytic, (CS) = custom smelters, electrolytic, (L) = lake. **LEAD:** common grade. **MAGNESIUM:** 99.8% pig Velasco, Tex. **NICKEL:** Port Colbourne, Canada. **ZINC:** prime western. **TIN:** see above; other primary prices, pg. 119.

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("P" temper except 6061-0)

Alloy	.002	.001	.136-.349	.280
1100, 3003	45.7	43.8	42.8	43.3
6062	53.1	48.4	46.9	46.0
6061-0	50.1	46.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6063 T-4
0-8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-55.8
24-26	42.7-44.2	52.8-57.8
36-38	46.7-49.3	58.9-60.8

Screw Machine Stock—2011-T-3

Size*	3/4	1/2-1/4	1/2-1	1/4-1 1/4
Price	82.0	61.3	69.7	67.8

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length*→	72	96	120	144
.019 gage	\$1.411	\$1.884	\$2.353	\$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type→	Gage→	.250	.250-	.188	.081	.003
AZ31B Stand, Grade		67.9	69.0	77.9	108.1	
AZ31B Spec.		93.8	95.7	108.7	171.3	
Tread Plate		70.6	71.7			
Tooling Plate		73.0				

Extruded Shapes

factor→	0-8	12-14	24-30	36-38
Comm. Grade.. (AZ31C)	69.6	70.7	75.6	89.3
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.3

Alloy Ingot

AZ91B (Die Casting) 87.25 (delivered)
AZ62A, AZ92A, AZ91C (Sand Casting) 40.75 (Velsco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

"A" Nickel Monel

	Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	128
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Shot, blocks		87	

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	49.63	48.86	49.83	
Brass, 70/30	43.67	44.11	43.61	46.48
Brass, Low	46.08	46.57	46.07	48.84
Brass, R L	46.89	47.43	46.83	49.70
Brass, Naval	47.83	48.14	51.24	
Muntz Metal	45.95	41.76		
Comm. Br.	48.30	48.84	48.24	50.88
Mang. Br.	51.57	45.67		
Phos. Br. 5%	58.59	69.09		

Free Cutting Brass Rod 29.28

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, \$8.50-\$10.10; alloy, \$15.95; Plate, HR, commercially pure, \$6.00-\$6.75; alloy, \$8.75-\$9.50. Wire, rolled and/or drawn, commercially pure, \$6.50-\$7.00; alloy, \$10.00-\$11.50; Bar, HR or forged, commercially pure, \$6.25-\$6.50; alloy, \$8.25-\$8.35; billets, HR, commercially pure, \$4.10-\$4.35; alloy, \$4.10-\$4.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex. 29.50
Beryllium aluminum 6% Be, Dollar per lb contained Be \$74.75
Beryllium copper, per lb cont'd Be \$43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading \$71.50
Bismuth, ton lots \$ 2.25
Cadmium, del'd \$ 1.45
Calcium, 99.9% small lots \$ 4.55
Chromium, 99.8% metallic basis \$ 1.31
Cobalt, 97-99% (per lb) \$2.00 to \$2.07
Germanium, per gm, f.o.b. Miami, Okla., refined \$5.00 to \$2.00
Gold, U. S. Treas., per troy oz. \$35.00
Indium, 99.9% dollars per troy oz. \$ 2.25
Iridium, dollars per troy oz. \$70 to \$80
Lithium, 98% \$11.00 to \$14.00
Magnesium, sticks, 100 to 500 lb \$9.00
Mercury, dollars per 76-lb flask, f.o.b. New York \$239 to \$242
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel \$9.60
Palladium, dollars per troy oz. \$15 to \$17
Platinum, dollars per troy oz. \$57 to \$60
Rhodium \$120.00 to \$125.00
Silver ingots (¢ per troy oz.) \$8.875
Thorium, per kg \$43.00
Vanadium \$ 3.45
Zirconium sponge \$ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 Ingot
No. 115 27.00
No. 120 26.25
No. 123 25.75
80-10-10 Ingot
No. 305 31.25
No. 315 29.25
88-10-2 Ingot
No. 210 38.25
No. 215 34.00
No. 245 30.75
Yellow Ingot
No. 405 22.75
Manganese bronze
No. 421 24.50

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper max. 24.75-25.00
0.60 copper max. 24.50-24.75
Piston alloys (No. 122 type) 24.25-25.25
No. 12 alum. (No. 2 grade) 21.50-22.00
108 alloy 22.00-22.50
195 alloy 25.00-26.00
13 alloy (0.60 copper max.) 24.25-24.75
AXS-679 (1 pct zinc) 21.75-22.25

(Effective Sept. 29, 1958)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97 1/2%	22.50-23.50
Grade 2—92-95%	21.25-22.25
Grade 3—90-92%	20.25-21.25
Grade 4—85-90%	17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	22 1/2	21 1/2
Yellow brass	17	15 1/2
Red brass	19 1/2	19
Comm. bronze	20 1/2	19 1/2
Mang. bronze	15 1/2	14 1/2
Yellow brass rod ends	16 1/2	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	22 1/2
No. 2 copper wire	21
Light copper	18 1/2
*Refinery brass	20 1/2
Copper bearing material	19
*Dry copper content	

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	22 1/2
No. 2 copper wire	21
Light copper	18 1/2
No. 1 composition	19 1/2
No. 1 comp. turnings	18 1/2
Hvy. yellow brass solids	14 1/2
Brass pipe	15 1/2
Radiators	15 1/2

	Aluminum
Mixed old cast	12 —12 1/2
Mixed new clips	15 —16
Mixed turnings, dry	13 —14

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

	Copper and Brass
No. 1 copper wire	19 1/2—20
No. 2 copper wire	17 1/2—18
Light copper	15 1/2—16
Auto radiators (unsweated)	11 1/2—12
No. 1 composition	15 1/2—16
No. 1 composition turnings	14 1/2—15
Cocks and faucets	12 1/2—13
Clean heavy yellow brass	10 1/2—11 1/2
Brass pipe	12 1/2—13 1/2
New soft brass clippings	13 1/2—14
No. 1 brass rod turnings	10 1/2—11 1/2

Aluminum

Alum. pistons and struts	5 1/2 — 6 1/2
Aluminum crankcases	9 1/2 — 9 3/4
1100 (2S) aluminum clippings	12 1/2 — 13 1/2
Old sheet and utensils	9 1/2 — 9 3/4
Bearings and turnings	6 1/2 — 6 3/4
Industrial castings	9 1/2 — 9 3/4
2024 (24S) clippings	10 1/2 — 11 1/2

Zinc

New zinc clippings	4 — 4 1/2
Old zinc	3 — 3 1/2
Zinc routings	1 1/2 — 2
Old die cast scrap	1 1/2 — 1 3/4

Nickel and Monel

Pure nickel clippings	52-54
Clean nickel turnings	37-40
Nickel anodes	52-54
Nickel rod ends	52-54
New Monel clippings	30-32
Clean Monel turnings	26-28
Old sheet Monel	18
Nickel silver clippings, mixed	15
Nickel silver turnings, mixed	

Lead

Soft scrap lead	6 1/2 — 6 3/4
Battery plates (dry)	2 — 2 1/2
Batteries, acid free	1 1/2 — 1 3/4

Miscellaneous

Block tin	75 — 76
No. 1 pewter	59 — 60
Auto babbitt	39 — 40
Mixer common babbitt	9 1/2 — 10
Solder joints	13 1/2 — 13 3/4
Siphon tops	45
Small foundry type	10 1/2 — 10 3/4
Monotype	10 1/2 — 10 3/4
Lino. and stereotype	9 1/2 — 9 3/4
Electrotype	8 1/2 — 8 3/4
Hand picked type shells	6 1/2 — 6 3/4
Lino. and stereo. dross	2 1/2 — 2 3/4
Electro dross	1 1/2 — 2

IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

STEEL
PRICESBILLETS, BLOOMS,
SLABSPIL-
INGSHAPES
STRUCTURALS

STRIP

Carbon
Rolling
Net TonCarbon
Forging
Net TonAlloy
Net TonSheet
Steel

Carbon

Hi Str.
Low
AlloyCarbon
Wide-
FlangeHot-
rolledCold-
rolledHi Str.
H.R. Low
AlloyHi Str.
C.R. Low
AlloyAlloy
Hot-
rolledAlloy
Cold-
rolled

EAST	Bethlehem, Pa.			\$119.00 B3		5.55 B3	8.10 B3	5.55 B3									
	Buffalo, N. Y.	\$80.00 R3, B3	\$99.50 R3, B3	\$119.00 R3, B3	6.50 B3	5.55 B3	8.10 B3	5.55 B3	5.10 B3, R3	7.425 S10, R7	7.575 B3						
	Phila., Pa.									7.875 P15							
	Harrison, N. J.																15.55 C11
	Conschohocken, Pa.		\$104.50 A2	\$126.00 A2					5.15 A2		7.575 A2						
	New Bedford, Mass.									7.875 R6							
	Johnstown, Pa.	\$80.00 B3	\$99.50 B3	\$119.00 B3		5.55 B3	8.10 B3										
	Boston, Mass.									7.975 T8							
	New Haven, Conn.									7.875 D1							
	Baltimore, Md.									7.425 T8							15.90 T8
	Phoenixville, Pa.					5.55 P2		5.55 P2									
	Sparrows Pt., Md.								5.10 B3		7.575 B3						
MIDDLE WEST	New Britain, Bridgeport, Wallingford, Conn.			\$119.00 N8						7.875 W1,S7							
	Pawtucket, R. I. Worcester, Mass.									7.975 N7, A3							15.90 N7 15.70 T8
	Alton, Ill.								5.30 L1								
	Ashland, Ky.								5.10 A7		7.575 A7						
	Canton-Massillon, Dover, Ohio		\$102.00 R3	\$119.00 R3, \$114.00 T3						7.425 G4		10.80 G4					15.50 C11
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	\$80.00 U1, R3	\$99.50 U1, R3,W8	\$119.00 U1, R3,W8	6.50 U1	5.50 U1, W8,P13	8.05 U1, Y1,W8	5.50 U1	5.10 W8, N4,A1	7.525 A1,T8, M8	7.575 W8		8.40 W8, S9,I3			15.55 A1, S9,G4,T8	
	Cleveland, Ohio									7.425 A5,J3		10.75 A5	8.40 J3				
	Detroit, Mich.			\$119.00 R5					5.10 G3, M2	7.425 M2, D1,D2,P11	7.575 G3	10.80 D2					
	Anderson, Ind.									7.425 G4							
	Gary, Ind. Harbor, Indiana	\$80.00 U1	\$99.50 U1	\$119.00 U1, Y1		5.50 U1, I3	8.05 U1, J3	5.50 I3	5.10 U1, I3,Y1	7.425 Y1	7.575 U1, I3,Y1	10.90 Y1	8.40 U1, Y1				
	Sterling, Ill.	\$80.00 N4				5.50 N4			5.20 N4								
	Indianapolis, Ind.									7.575 R3							15.70 R3
WEST	Newport, Ky.								5.10 A9				8.40 A9				
	Niles, Warren, Ohio Sharon, Pa.		\$99.50 S1, C10	\$119.00 C10,S1					5.10 R3, S1	7.425 R3, T4,S1	7.575 R3, S1	10.80 S1, R3	8.40 S1			15.55 S1	
	Owensboro, Ky.	\$80.00 G5	\$99.50 G5	\$119.00 G5													
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Aliquippa, Pa.	\$80.00 U1, P6	\$99.50 U1, C11,P6	\$119.00 U1, C11,B7	6.50 U1	5.50 U1, J3	8.05 U1, J3	5.50 U1	5.10 P6	7.425 J3,B4			8.40 S9			15.55 S9	
	Weirton, Wheeling, Follansbee, W. Va.				6.50 U1, W3	5.50 W3		5.50 W3	5.10 W3	7.425 F3	7.575 W3	10.80 W3					
	Youngstown, Ohio	\$80.00 R3	\$99.50 Y1, C10	\$119.00 Y1			8.05 Y1		5.10 U	7.425 Y1,R3	7.575 U1, Y1	10.95 Y1	8.40 U1, Y1			15.55 R3, Y1	
	Fontana, Cal.	\$90.50 K1	\$109.00 K1	\$140.00 K1		6.30 K1	8.85 K1	6.45 K1	5.85 K1	9.275 K1							
	Geneva, Utah		\$99.50 C7			5.50 C7	8.05 C7										
	Kansas City, Mo.					5.60 S2	8.15 S2									8.65 S2	
	Los Angeles, Torrance, Cal.		\$109.00 B2	\$139.00 B2		6.20 C7, B2	8.75 B2		5.85 C7, B2	9.325 J3 9.30 C1			9.60 B2			17.75 J3	
	Minnequa, Colo.					5.80 C6			6.20 C6	9.375 C6							
	SOUTH	Portland, Ore.					6.25 O2										
San Francisco, Niles, Pittsburg, Cal.			\$109.00 B2			6.15 B2	8.70 B2		5.85 C7, B2								
Seattle, Wash.			\$113.00 B2			6.25 B2	8.80 B2		6.10 B2								
SOUTH	Atlanta, Ga.					5.70 A8			5.10 A8								
	Fairfield, Ala. City, Birmingham, Ala.	\$80.00 T2	\$99.50 T2			5.50 T2 R3,C16	8.05 T2		5.10 T2, R3,C16		7.575 T2						
	Houston, Lone Star, Texas		\$104.50 S2	\$124.00 S2		5.60 S2	8.15 S2						8.65 S2				

(Effective Sept. 29, 1958)

IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

STEEL
PRICES

SHEETS

WIRE
ROD

TINPLATE †

BLACK
PLATEHot-rolled
18 ga.
& hvyr.Cold-
rolledGalvanized
(Hot-dipped)Enamel-
ingLong
TerneHi Str.
Low Alloy
H.R.Hi Str.
Low Alloy
C.R.Hi Str.
Low Alloy
Galv.Cokes*
1.25-lb.
base boxElectro*
0.25-lb.
base boxHolloware
Enameling
29 ga.

EAST

Buffalo, N. Y.

5.10 B3

6.275 B3

7.525 B3

9.275 B3

6.40 W6

† Special coated mfg.
terne deduct 50¢ from
1.25-lb. coke base box
price. Can-making quality
blackplate 55 to 128 lb.
deduct \$2.20 from 1.25 lb.
coke base box.
* COKES: 1.50-lb.
add 25¢.
ELECTRO: 0.50-lb. add
25¢; 0.75-lb. add 65¢;
1.00-lb. add \$1.00. Differ-
ential 1.00 lb. 0.25 lb.
add 65¢.

Claymont, Del.

Coatesville, Pa.

Conshohocken, Pa.

5.15 A2

6.325 A2

7.575 A2

Harrisburg, Pa.

Hartford, Conn.

Johnstown, Pa.

Fairless, Pa.

5.15 U1

6.325 U1

7.575 U1

9.275 U1

6.40 B3

\$10.15 U1

\$8.85 U1

New Haven, Conn.

Phoenixville, Pa.

Sparrows Pt., Md.

5.10 B3

6.275 B3

6.875 B3

7.525 B3

9.275 B3

10.025 B3

6.50 B3

\$10.15 B3

\$8.85 B3

Worcester, Mass.

6.70 A5

Trenton, N. J.

MIDDLE WEST

Alton, Ill.

6.60 L1

Ashland, Ky.

5.10 A7

6.875 A7

6.775 A7

7.525 A7

Canton-Massillon,
Dover, Ohio6.875 R1,
R3

Chicago, Joliet, Ill.

5.10 W8,
A17.525 U1,
W86.40 A5,
R3,W8

Sterling, Ill.

6.50 N4,K2

Cleveland, Ohio

5.10 R3,
J36.275 R3,
J3

7.65 R3*

6.775 R3

7.525 R3,
J39.275 R3,
J3

6.40 A5

Detroit, Mich.

5.10 G3,
M26.275 G3,
M2

7.525 G3

9.275 G3

Newport, Ky.

5.10 A1

6.275 A1

Gary, Ind. Harbor,
Indiana5.10 U1,
I3,Y16.275 U1,
I3,Y16.875 U1,
I36.775 U1,
I3,Y1

7.225 U1

7.525 U1,
Y1,I39.275 U1,
Y1

6.40 Y1

\$10.05 U1,
Y1\$8.75 I3,
U1,Y17.50 U1,
Y1

Granite City, Ill.

5.20 G2

6.375 G2

6.975 G2

6.875 G2

\$8.85 G2

7.60 G2

Kokomo, Ind.

6.975 C9

6.50 C9

Mansfield, Ohio

5.10 E2

6.275 E2

7.225 E2

Middletown, Ohio

6.275 A7

6.875 A7

6.775 A7

7.225 A7

Niles, Warren, Ohio
Sharon, Pa.5.10 R3,
N3,S1

6.275 R3

6.875 R3,
7.65 R3*6.775 N3,
S17.225 N3,
S1*,R37.525 R3,
S19.275 S1,
R3

\$8.75 R3

Pittsburgh, Pa.

Midland, Pa.

Butler, Pa.

Donora, Pa.

Aliquippa, Pa.

5.10 U1,
J3,P66.275 U1,
J3,P66.875 U1,
J3

6.775 U1

7.525 U1,
J39.275 U1,
J310.025 U1,
J36.40 A5,
J3,P6\$10.05 W5,
J3\$8.75 U1,
J37.50 U1,
J3

Portsmouth, Ohio

5.10 P7

6.275 P7

6.40 P7

Weirton, Wheeling,
Follansbee, W. Va.5.10 W3,
W56.275 W3,
F3,W56.875 W3,
W5
7.50 W3*7.225 W3,
W5

7.525 W3

9.275 W3

\$10.05 W5,
W3\$8.75 W5,
W3

7.50 W5

Youngstown, Ohio

5.10 U1,
Y1

6.275 Y1

7.50 J3*

6.775 Y1

7.525 Y1

9.275 Y1

6.40 Y1

WEST

Fontana, Cal.

5.85 K1

7.525 K1

8.275 K1

10.575 K1

\$10.00 K1

\$9.50 K1

Geneva, Utah

5.20 C7

Kansas City, Mo.

6.65 S2

Los Angeles,
Torrance, Cal.

7.20 B2

Minnequa, Colo.

6.65 C6

San Francisco, Niles,
Pittsburg, Cal.

5.80 C7

7.225 C7

7.625 C7

7.20 C7

\$10.00 C7

\$9.50 C7

SOUTH

Atlanta, Ga.

Fairfield, Ala.

Alabama City, Ala.

5.10 T2,
R36.275 T2,
R36.875 T2,
R3

6.775 T2

6.40 T2,R3

\$10.15 T2

\$8.85 T2

Houston, Texas

6.65 S2

* Electrogalvanized sheets.

(Effective Sept. 29, 1958)

*7.425 at Sharon-Niles is 7.225

IRON AGE

STEEL
PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

STEEL PRICES		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 B3	9.025 B3	8.30 B3					
	Buffalo, N. Y.	5.675 R3,B3	5.675 R3,B3	7.70 B5	6.725 B3,R3	9.025 B3,B5	8.30 B3	5.30 B3				8.00 W6
	Claymont, Del.							5.30 C4		7.50 C4	7.95 C4	
	Coatesville, Pa.							5.30 L4		7.50 L4	7.95 L4	
	Conschocken, Pa.							5.30 A2	6.375 A2	7.50 A2	7.95 A2	
	Harrisburg, Pa.							5.30 P2	6.475 P2			
	Milton, Pa.	5.825 M7	5.825 M7									
	Hartford, Conn.			8.15 R3		9.325 R3						
	Johnstown, Pa.	5.675 B3	5.675 B3		6.725 B3		8.30 B3	5.30 B3		7.50 B3	7.95 B3	8.00 B3
	Fairless, Pa.	5.825 U1	5.825 U1		6.875 U1							
	Newark, N. J.			8.10 W10, P10		9.20 W10, P10						
	Camden, N. J.											
	Bridgeport, Putnam, Willimantic, Conn.			8.20 W10 8.15 J3	6.80 N8	9.175 N8						
	Sparrows Pt., Md.		5.675 B3					5.30 B3		7.50 B3	7.95 B3	8.10 B3
MIDDLE WEST	Palmer, Worcester, Readville, Mass. Mansfield, Mass.			8.20 B5, C14		9.325 A5,B5						8.30 A5, W6
	Spring City, Pa.			8.10 K4		9.20 K4						
	Alton, Ill.	5.875 L1										8.20 L1
	Ashland,Newport,Ky.							5.30 A7,A9		7.50 A9	7.95 A7	
	Canton, Massillon, Mansfield, Ohio	6.15* R3		7.65 R3,R2	6.725 R3 6.475 T5	9.025 R3,R2 8.775 T5	5.30 E2					
	Chicago, Joliet, Waukegan, Ill. Harvey, Ill.	5.675 U1,R3, W8,N4,P13	5.675 U1,R3, N4,P13,W8	7.65 A5, W10,W8, B5,L2,N9	6.725 U1,R3, W8	9.025 A5, W10,W8, L2,N8,B5	8.30 U1,W8, R3	5.30 U1,A1, W8,I3	6.375 U1	7.50 U1, W8	7.95 U1, W8	8.00 A5,R3, W8,N4, K2,W7
	Cleveland, Ohio Elyria, Ohio	5.675 R3	5.675 R3	7.65 A5,C13, C18		9.025 A5, C13,C18	8.30 R3	5.30 R3,J3	6.375 J3		7.95 R3,J3	8.00 A5, C13,C18
	Detroit, Mich.	5.675 G3	5.675 G3	7.90 P3 7.85 P8,B5 7.65 R5	6.725 R5,G3	9.025 R5 9.225 B5,P3, P8	8.30 G3	5.30 G3		7.50 G3	7.95 G3	
	Duluth, Minn.											8.00 A5
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 U1,I3, Y1	5.675 U1,I3, Y1	7.65 R3,J3	6.725 U1,I3, Y1	9.025 R3,M4	8.30 U1,Y1	5.30 U1,I3, Y1	6.375 J3, I1	7.50 U1, Y1	7.95 U1, Y1,I3	8.10 M4
	Granite City, Ill.							5.40 G2				
	Kokomo, Ind.		5.775 C9									8.10 C9
	Sterling, Ill.	5.775 N4	5.775 N4					5.30 N4				8.10 K2
	Niles, Warren, Ohio Sharon, Pa.			7.65 C10	6.725 C10,S1	9.025 C10	7.925 S1	5.30 R3,S1		7.50 S1	7.95 R3, S1	
	Owensboro, Ky.	5.675 G5			6.725 G5							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 U1,J3	5.675 U1,J3	7.65 A5,B4, R3,J3,C11, W10,S9,C8, M9	6.725 U1,J3, C11,B7	9.025 A5, W10,R3,S9, C11,C8,M9	8.30 U1,J3	5.30 U1,J3	6.375 U1	7.50 U1, J3,B7	7.95 U1, J3,B7	8.00 A5, J3,P6
	Portsmouth, Ohio											8.00 P7
	Weirton, Wheeling, Follansbee, W. Va.							5.30 W5				
	Youngstown, Ohio	5.675 U1,R3, Y1	5.675 U1,R3, Y1	7.65 A1,Y1, F2	6.725 U1,Y1	9.025 Y1,F2	8.30 U1,Y1	5.30 U1, R3,Y1		7.50 Y1	7.95 U1,Y1	8.00 Y1
WEST	Emeryville, Cal. Fontana, Cal.	6.425 J5 6.375 K1	6.425 J5 6.375 K1		7.775 K1		8.625 K1	6.10 K1		8.30 K1	8.75 K1	
	Geneva, Utah							5.30 C7			7.95 C7	
	Kansas City, Mo.	5.925 S2	5.925 S2		6.975 S2		8.55 S2					8.25 S2
	Los Angeles, Torrance, Cal.	6.375 C7,B2	6.375 C7,B2	9.10 R3,P14, S12	7.775 B2	11.00 P14, S12	8.625 B2					8.95 B2
	Minnequa, Colo.	6.125 C6	6.125 C6					6.15 C6				8.25 C6
	Portland, Ore.	6.425 O2	6.425 O2									
	San Francisco, Niles, Pittsburg, Cal.	6.375 C7 6.425 B2	6.375 C7 6.425 B2				8.675 B2					8.95 C7,C6
	Seattle, Wash.	6.425 B2,N6	6.425 B2				8.675 B2	6.20 B2		8.40 B2	8.85 B2	
	Atlanta, Ga.	5.875 A8	5.675 A8									8.00 A8
	Fairfield, Ala. City, Birmingham, Ala.	5.675 T2,R3, C16	5.675 T2,R3, C16	8.25 C16			8.30 T2	5.30 T2,R3			7.95 T2	8.00 T2,R3
SOUTH	Houston, Ft. Worth, Lone Star, Texas	5.925 S2	5.925 S2		6.975 S2		8.55 S2	5.40 S2		7.60 S2	8.05 S2	8.25 S2

† Merchant Quality—Special Quality 35¢ higher.

(Effective Sept. 29, 1958)

* Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

- A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme Newport Steel Co., Newport, Ky.
B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birminghoro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.
C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shifting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C12 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shifting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.
D1 Detroit Steel Corp., Detroit
D2 Dearborn Div., Sharon Steel Corp.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.
E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

- G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owenboro, Ky.
H1 Hanna Furnace Corp., Detroit
I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland
J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.
K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.
L1 Lackde Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.
M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.
N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.
O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland
P1 Page Steel & Wire Div., Moneesen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit

- P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebbing Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.
S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.
T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston
U1 United States Steel Corp., Pittsburgh
U2 Universal Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham
W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.
Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (per) f.o.b. mills. Base price about \$200 per net ton.

STANDARD T. & C.	BUTTWELD												SEAMLESS									
	1½ in.		2½ in.		1 in.		1¼ in.		1½ in.		2 in.		2½-3 in.		2 in.		2½ in.		3 in.		3½-4 in.	
	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.
Sparrows Pt. B3	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Youngstown R3	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fontana K1	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	*15.50								
Pittsburgh J3	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Alton, Ill. L1	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Sharon M1	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fairless N2	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Pittsburgh N1	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Wheeling W3	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Wheatland W4	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Youngstown Y1	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Indiana Harbor Y1	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50								
Lorain N2	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. B3	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Youngstown R3	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless N2	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Fontana K1	*6.25		*2.25			0.75		1.25		1.75		2.25		2.75								
Pittsburgh J3	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Alton, Ill. L1	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Sharon M3	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh N1	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Wheeling W5	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland W4	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown Y1	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Indiana Harbor Y1	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	0.75	13.75	0.25	14.25	0.75	14.75	0.50								
Lorain N2	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50

Threads only, butt weld and seamless, 2 1/4 pt. higher discount. Plain ends, butt weld and seamless, 3-in. and under, 5 1/2 pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/4, 1 1/2 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2 1/2 and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts.
East St. Louis zinc price now 10¢ per lb.

(Effective Sept. 29, 1958)

METAL POWDERS

Per pound, in ton lots for minus 100 mesh

Sponge iron, 98+ $\frac{1}{2}$ % Fe, 100 mesh, freight allowed east of Miss. River, ocean bags, 23,000 lbs. and over	10.5¢
Sponge iron, 98+ $\frac{1}{2}$ % Fe, 100 mesh, f.o.b. point of origin for shipment west of Miss. River, 100 lb. bags	9.5¢
100 mesh, cutting and scarfing grade, 100 lb. pails	8.5¢
40 mesh, welding rod coating, 100 lb. bags	7.7¢
Canadian sponge iron, de'd in East, 23,000 lbs. and over	10.5¢
Atomized iron powder, 98% + Fe, 40 mesh, f.o.b. point of origin, in 100 lb. bags	7.7¢
Atomized iron powder, 98% + Fe, f.o.b. point of origin, in 100 lb. bags—RZ-365—freight allowed east of Miss. River	10.5¢
Atomized iron powder, 98% + Fe, cutting and scarfing grade, f.o.b. point of origin	8.5¢
Electrolytic iron, annealed, hydrogen reduced, 100 mesh iron powder, f.o.b. point of origin, imported 99.5+ $\frac{1}{2}$ % Fe	10.5¢ 24.5¢ 33.0¢
Electrolytic iron, unannealed minus 325 mesh, 99+ $\frac{1}{2}$ % Fe	57.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+ $\frac{1}{2}$ % Fe, 88.0¢ to \$2.85	
Aluminum, freight allowed	38.00¢
Brass, 5000 lb. lots	31.0¢ to 46.7¢
Cobalt, reduced, 99.75%, f.o.b. point of origin	\$2.94
Copper, electrolytic	41.00¢
Copper, electrolytic, imported, per lb., New York	41.9¢
Copper, precipitated, 24,000 lbs. and over, de'd.	40.5¢ to 45¢
Copper, atomized	39.8¢ to 48.3¢
Chromium, electrolytic, 99.85% min. Fe .03 mix. de'd	\$5.00
Lead, f.o.b. point of origin (2000 lbs. or more)	19¢
Manganese, f.o.b. point of origin	46.0¢
Molybdenum, 99%	\$3.60 to \$3.95
Nickel	\$1.05 to \$1.13
Nickel steel powder, de'd in East, 23,000 lbs. and over	13¢
Solder powder	13¢ plus met. value

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. Mill) Pot. Discounts

Machine and Carriage Bolts	Less than Container Price	1-4 Containers	5 Containers	20,000 Lb.
$\frac{1}{4}$ " and smaller x 6" and shorter	34	33	33	32
$\frac{1}{4}$ " x 3" x longer than 6"	9	27	34	41
Roll thread carriage bolts $\frac{1}{4}$ " & smaller x 6" and shorter	33	46	54	58
Lag, all diam. x 6" & shorter	10	28	35	42
Lag, all diam. longer than 6 in.	*9	13	22	30
Flow bolts, $\frac{1}{4}$ " and smaller x 6" and shorter	10	28	35	42

(Add 25 pot for broken case quantities)

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
$\frac{1}{2}$ " in. or smaller	62
$\frac{1}{2}$ " in. to 1 $\frac{1}{2}$ " in. inclusive	56
1 $\frac{1}{2}$ " in. and larger	51 $\frac{1}{2}$

C. P. Hex, reg. & hvy.	
$\frac{1}{2}$ " in. and smaller	62
$\frac{1}{2}$ " in. to 1 $\frac{1}{2}$ " in. inclusive	56
1 $\frac{1}{2}$ " in. and larger	51 $\frac{1}{2}$

Hot Galv. Hex Nuts (All Types)	
$\frac{1}{2}$ " in. and smaller	41

Semi-finished Hex Nuts	
$\frac{1}{2}$ " in. or smaller	62
$\frac{1}{2}$ " in. to 1 $\frac{1}{2}$ " in. inclusive	57
1 $\frac{1}{2}$ " in. and larger	51 $\frac{1}{2}$

(Add 25 pot for broken case or keg quantities)

Finished	
$\frac{1}{2}$ " in. and smaller	65

Rivets	Base per 100 lb
$\frac{1}{2}$ " in. and larger	\$12.25
7/16 in. and smaller	19

Cap Screws

Discount (Packages)	Full case
New std. hex head, packaged	
$\frac{1}{4}$ " diam. and smaller x 6" and shorter	54 42
$\frac{1}{4}$ " & 1" diam. x 6" and shorter	38 23
$\frac{1}{4}$ " diam. and smaller x longer than 6"
$\frac{1}{4}$ ", $\frac{3}{8}$ ", and 1" diam. x longer than 6"
$\frac{1}{4}$ " through $\frac{1}{2}$ " dia. x 6" and shorter	59 48
$\frac{1}{4}$ " through 1" dia. x 6" and shorter	45 32
Minimum quantity— $\frac{1}{4}$ " through $\frac{1}{2}$ " diam., 15,000 pieces; 7/16" through $\frac{1}{2}$ " diam., 5,000 pieces; $\frac{3}{8}$ " through 1" diam., 2,000 pieces.	

Machine Screws & Stove Bolts

Discount	Mach. Screws	Stove Bolts
Plain Finish	60	60
Cartons Bulk	Quantity	
To $\frac{1}{4}$ " diam. incl.	25,000-and over 60	..
5/16 to $\frac{1}{2}$ " diam. incl.	15,000-200,000 60	..

Machine Screws & Stove Bolt Nuts

Discount	Hex	Square
In Cartons	16	19
In Bulk	Quantity	
$\frac{1}{4}$ " diam. & smaller	25,000-and over 16	16

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities		Sheets			Strip	Plates	Shapes	Bars		Alloy Bars				
	City Delivery? Charge	Hot-Rolled (10 ga. & hvy.)	Cold-Rolled (15 gage)	Galvanized (10 gage)†	Hot-Rolled		Standard Structural	Hot-Rolled (merchant)	Cold- Finished	Hot-Rolled 4815	As rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 4615 As rolled	Cold-Drawn 4140 Annealed
Atlanta		8.58	9.87	10.13	8.91	9.29	9.40	9.39	13.24*					
Baltimore	\$.10	8.10	9.00	9.78	8.80	8.76	8.60	8.75	11.88*	16.28	15.28	19.82	19.08	
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99						
Boston	.15	9.48	10.54	11.55	9.84	10.17	10.13	10.26	13.49*	16.79	15.81	20.29	19.56	
Buffalo	.15	8.40	9.15	11.22	8.90	9.35	9.40	9.30	11.60*	16.34	15.55	19.01	19.30	
Chicago	.15	8.40	9.60	10.60	8.66	9.04	9.15	9.14	9.30	16.20	15.20	19.70	18.95	
Cincinnati	.15	8.58	9.65	10.60	8.98	9.42	9.71	9.46	11.68*	16.52	15.52	20.02	19.27	
Cleveland	.15	8.51	9.69	10.35	8.78	9.28	9.54	9.25	11.40*	16.31	15.31	19.81	19.06	
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84	
Detroit	.15	8.66	9.85	10.96	9.03	9.41	9.71	9.45	9.66	15.46	15.48	18.81	19.23	
Houston		8.10	8.60		8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95	
Kansas City	.15	9.02	10.27	11.32	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62	
Los Angeles		8.70*	11.20- 11.80	12.15	9.15	9.10	9.25	9.10	12.95	17.30	16.35	21.30	20.60	
Memphis	.15	8.55	9.80		8.60	8.93	9.01	8.97	12.11*					
Milwaukee	.15	8.54	9.73	10.74	8.80	9.18	9.37	9.28	9.54	16.34	15.34	19.84	19.09	
New York	.10	8.97	10.23	10.66	9.74	9.07	9.84	10.09	13.31*	16.16	15.60	20.10	19.35	
Norfolk	.20	8.29			8.90	8.65	9.20	8.90	10.70					
Philadelphia	.10	8.10	10.00	11.27	8.80	8.85	8.60	8.75	12.05*	16.58	15.58	20.08	19.33	
Pittsburgh	.15	8.50- 8.60	9.70- 9.95	11.00	8.76	9.05	9.15	9.14	11.40*	16.20	15.20	19.70	18.95	
Portland		10.00†	11.75‡	13.30‡	11.95‡	11.50‡	11.10‡	9.85‡	15.30*	18.50	17.45	20.75	20.25	
San Francisco	.10	9.75	11.20	11.40	9.85	10.10	9.95	10.25	13.85	17.05	16.35	21.05	20.60	
Seattle		9.95	11.15	12.20	10.00	9.70	9.00	10.10	14.70	17.15	16.80	20.65	20.60	
Spokane	.15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	14.85	17.75	16.95	21.55	20.75	
St. Louis	.15	8.60	9.94	10.98	9.04	9.42	9.43	9.52	9.93	16.58	15.58	20.08	19.33	
St. Paul	.15	8.94	10.19	10.86	8.99	9.45	9.53	9.70‡	10.16		15.41		19.21	

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 15 and 16 gage. ††104 zinc. ‡Deduct for country delivery. *C1018—1 in. rounds. †10 ga. x 36" x 120"; †20 ga. x 96" x 120"; †26 ga. x 30" x 96"; †4 1/4" x 1" in lots of 1000 to 9999; †sheared plate 1/4" x 84" in lots of 1000 to 9999; †3" x 6.70" in lots of 1000 to 9999; †M-1020—1-in. rounds in lots of 1000 to 9999. †15 ga. & heavier.

(Effective Sept. 29, 1958)

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	41.50
Electrodeposited	32.75
Brass, 80-20, ball anodes, 2000 lb or more	45.50
Zinc, ball anodes, 2000 lb lots	16.50
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carton, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.55
Tin, ball anodes \$1.05 per lb (approx.).	

Chemicals

Copper cyanide, 100 lb drum	66.20
Copper sulphate, 100 lb bags, per cwt.	22.15
Nickel salts, single, 100 lb bags	45.00
Nickel chloride, freight allowed, 100 lb	82.25
Sodium cyanide, domestic, f.o.b.	23.70
N. Y., 200 lb drums	23.70
(Philadelphia price 24.15)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum	45.50
N. Y.	
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.7
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 4 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955 issue. Source: U. S. Pipe and Foundry Co.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mail.	Beas.	Low Phos.
Birdsboro, Pa. B6	68.00	68.50	69.00	69.50	
Birmingham R3	62.00	62.50*	63.00	63.50	
Birmingham W9	62.00	62.50*	63.00	63.50	
Birmingham U4	62.00	62.50*	63.00	63.50	
Buffalo R3	66.00	66.50	67.00	67.50	
Buffalo H1	66.00	66.50	67.00	67.50	
Buffalo W6	66.00	66.50	67.00	67.50	
Chester P2	66.00	66.50	67.00	67.50	
Chicago J4	66.00	66.50	67.00	67.00	
Cleveland A5	66.00	66.50	67.00	67.00	71.00†
Cleveland R3	66.00	66.50	67.00	67.00	
Duluth J4	66.00	66.50	67.00	67.00	71.00†
Erie J4	66.00	66.50	67.00	67.00	71.00†
Everett M6	67.50	68.00	68.50	69.00	
Fontana K1	75.00	75.50	76.00	76.50	
Genora, Utah C7	66.00	66.50	67.00	67.00	
Granite City C2	67.00	67.50	68.00	68.50	
Hubbard Y1	66.00	66.50	67.00	67.00	
Ironton, Utah C7	66.00	66.50	67.00	67.00	
Midland C11	66.00	66.50	67.00	67.00	
Minnequa C6	68.00	68.50	69.00	69.00	
Monessen P6	66.00	66.50	67.00	67.00	71.00†
Neville Is. P4	66.00	66.50	67.00	67.00	
N. Tawanda T1	66.00	66.50	67.00	67.00	
Sharpsville S3	66.00	66.50	67.00	67.00	
So. Chicago R3	66.00	66.50	67.00	67.00	
So. Chicago W8	66.00	66.50	67.00	67.00	
Swedeland A2	68.00	68.50	69.00	69.00	
Toledo J4	66.00	66.50	67.00	67.00	
Troy, N. Y. R3	68.00	68.50	69.00	69.00	73.00
Youngstown Y1	66.00	66.50	67.00	67.00	

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, \$2 per ton for 0.50 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Add \$1.00 for 0.31-0.40 pct phos.

Silvery Iron: Buffalo (6 pct), H1, \$79.25; Jackson J1, J4 (Globe Div.), \$78.00; Niagara Falls (15.01-15.50), \$101.00; Keokuk (14.01-14.50), \$103.50; (15.51-16.00), \$106.50. Add \$1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add \$1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): \$64.00. Add \$1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingot, re-roll	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	30.25	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	28.25	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	33.75	33.75	34.25	34.25
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	40.00	40.75	42.00	42.75	45.50	45.25	69.25	52.50	61.50	32.00	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; Vandergrift, Pa., U1; Washington, Pa., W2, J2; Baltimore, El; Middletown, O., A7; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., J2; Detroit, M2; Louisville, O., R3.

Strip: Midland, Pa., C11; Waukegan, Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leeburg, Pa., A3; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; S. Chicago, U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, A5; Canton, O., T5, R3; Ft. Wayne, H; Detroit, R5; Gary, U1; Owensboro, Ky., G5; Bridgeport, Conn., N6.

Bar: Baltimore, A7; S. Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; S. Chicago, U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, A5; Canton, O., T5, R3; Ft. Wayne, H; Detroit, R5; Gary, U1; Owensboro, Ky., G5; Bridgeport, Conn., N6.

Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2; Detroit, R5.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11; S. Chicago, U1.

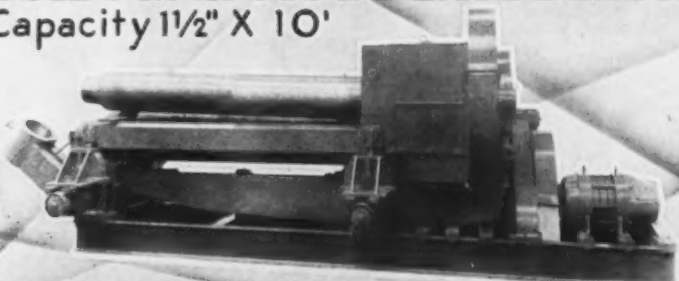
Plates: Baltimore, El; Brackenridge, Pa., A3; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., J2; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15; Vandergrift, Pa., U1; Gary, U1.

Forging billets: Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11; Detroit, R5; Munhall, Pa., S. Chicago, U1; Owensboro, Ky., G5; Bridgeport, Conn., N6.

(Effective Sept. 29, 1958)

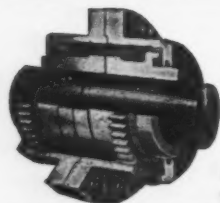
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Capacity 1½" X 10'



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Light and heavy machinery for all classes of sheet metal, plate and structural work.

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SPECIAL . . .

Square & Rectangular Steel Tubing

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Exact Length

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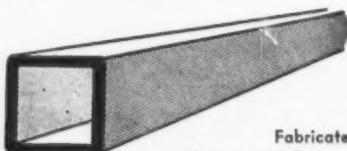
to

8 x 8

10 Gauge

to

¾" Wall



Fabricated
Shapes to 20 ft. Long.

Harrison SHEET STEEL CO.

FABRICATORS FOR INDUSTRY SINCE 1928

4718 W. 5th AVE., CHICAGO 44

FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, 30-100% max. Si.			
0.02% C	41.00	0.50% C	38.00
0.05% C	39.00	1.00% C	37.75
0.10% C	38.50	1.50% C	37.50
0.20% C	38.25	2.00% C	37.25
4.00-4.50% C, 60-70% Cr, 1-2% Si.			28.75
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si.			27.50
0.025% C (Simplex)			36.75
0.10% C, 62-57% Cr, 2.00% max Si.			37.50
7-8 1/4% max C, 50-55% Cr, 3-6% max Si.			22.50
7-8 1/4% max C, 50-55% Cr, 3% max Si.			25.00

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule. Add 5¢ for each additional 0.25% of N.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.	
0.10% max. C	\$1.31
0.50% max. C	1.31
9 to 11% C, 88-91% Cr, 0.75% Fe.	1.40

Electrolytic Chromium Metal

Per lb of metal 3" x D plate (1/4" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.	
Carloads	\$1.29
Ton lots	1.31
Less ton lots	1.33

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-45%, C 0.05% max.)		
Carloads, delivered, lump, 3-in. x down, packed.		
Price is sum of contained Cr and contained Si.		
Carloads, bulk	27.50	14.20
Ton lots	32.75	15.65
Less ton lots	34.35	17.30

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Si, 3.00 max. Fe.	
Carloads	25.65
Ton lots	27.95
Less ton lots	29.45

Calcium-Manganese-Silicon

Cents per lb of alloy, lump, delivered, packed.	
16-20% Ca, 14-18% Mn, 53-59% Si.	24.25
Carloads	26.15
Ton lots	27.15

SMZ

Cents per pound of alloy, delivered. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe 1/2 in. x 12 mesh.	
Ton lots	21.15
Less ton lots	22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5: 38-42% Cr, 17-19% Si, 8-11% Mn, packed.	
Carload lots	18.45
Ton lots	19.95
Less ton lots	21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.	
Carload packed	19.20
Ton lots to carload packed	21.15
Less ton lots	22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25
Add or subtract 0.1¢ for each 1 pct Mn above or below base content.	
Briquets, delivered, 66 pct Mn:	
Carloads, bulk	14.80
Ton lots packed in bags	17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.			
Manganese	Silicon		
16 to 19%	3% max.	\$100.50	
19 to 21%	3% max.	102.50	
21 to 23%	3% max.	105.00	

Manganese Metal

2 in. x down, cents per pound of metal delivered.	
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.	
Carload, packed	45.75
Ton lots	47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.	
Carloads	34.00
Ton lots	36.00
250 to 1999 lb	38.00
Premium for Hydrogen-removed metal	0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn	
	\$5.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, del'd Mn 85-90%.			
	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	32.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.	
Carloads bulk	12.80
Ton lots, packed	14.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet	15.10
Packed, pallets, 3000 lb up to carloads	16.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00.	
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Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.			
	Ton lots	Carloads, packed	Carloads, bulk
96.75% Si, 1.25% Fe	24.20	22.90	
98% Si, 0.75% Fe	24.95	23.65	

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.	
Carloads, bulk	7.70
Ton lots, packed	10.50

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.			
50% Si	14.20	75% Si	16.40
65% Si	15.25	85% Si	18.10
90% Si	19.50		

Ferrovandium

50-55% V delivered, per pound, contained V, in any quantity.	
Openhearth	3.20
Crucible	3.30
High speed steel (Primox)	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.			
	Cast	Turnings	Distilled
Ton lots	\$2.05	\$2.95	\$3.75
100 to 1999 lb.	2.40	3.30	4.65

(Effective Sept. 29, 1958)

Alsilfer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk	10.35¢
Ton lots	11.70¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo

	\$1.28
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Ferrocolumbium, 50-50%, 2 in. x D, delivered per pound contained Cb.

Ton lots	\$4.00
Less ton lots	4.05

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Sb plus Ta

	\$3.80
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Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo

	\$1.68
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Ferrophosphorus, electric, 23-26% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per gross ton

10 tons to less carload	\$120.00
	\$131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti

	\$1.35
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Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti

	\$1.50
Less ton lots	\$1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton

	\$240.00
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Ferrotungsten, 1/4 x down packed, per pounds contained W, ton lots delivered

	\$2.15
(nominal)	

Molybde oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa.

bags, f.o.b. Washington, Pa., Langeloth, Pa.	\$1.41
	\$1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump	18.50¢
Ton lots, packed lump	20.50¢
Less ton lots	21.00¢

Vanadium oxide, 36-39% V₂O₅ per pound contained V₂O₅

	\$1.38
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Zirconium, per lb of alloy 35-40% f.o.b. freight allowed, carloads, packed

	27.25¢
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12-15% del'd lump, bulk-carloads

	9.25¢
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Boron Agents

Borasil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B

2000 lb carload	\$5.50
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Borfram, f.o.b. Niagara Falls.

Ton lots per pound	45¢
Less ton lots, per pound	50¢

Corbortum, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots per pound	14.00¢
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Ferroboreon, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots.

F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up	
--	--

10 to 14% B	.85
14 to 19% B	1.20
19% min. B	1.50

Grainal, f.o.b. Cambridge, O., freight allowed, 100 lb and over

No. 1	\$1.05
No. 79	50¢

Manganese-Boron, 75.00% Mn, 15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots (packed)	\$1.46
Less ton lots (packed)	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots

	2.15
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ELECTRICAL POWER EQUIPMENT IN STOCK DC MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	3900	New Elliott	Enc. F.V.	475	320
1	3900	New Whse.	Enc. F.V.	525	600
1	2250	New Elliott	Enc. F.V.	600	200/300
1	2200	G.E.	MCF	600	400/500
1	1750	New Elliott	Enc. F.V.	250	175/350
8	1500	New Whse.	Enc. F.V.	325	600
1	1375	G.E.	MCF	415	1300
1	1300	G.E.	MCF-12	300	200/400
1	1200	G.E.	MCF	600	450/600
1	1000	Whse.		500	800/2000
1	940	Whse.	QM	250	140/170
2	910	S.S.	Enc. F.V.	600	800/1000
2	800	G.E.	MCF	250	400/750
2	750	G.E.	MCF	600	450/900
1	750	G.E.	MCF	600	300/720
1	750	G.E.	MCF	600	120/260
2	645	S.S.	Enc. F.V.	300	1000
4	600	Whse.		250	275/550
1	500	G.E. B.B.	TLF-2656H	250	2000/3600
1	500	G.E.	MPC-10	250	188/400
3	450	Whse.		550	415
2	400	G.E.	CY-275	300	1000/1500
1	300	Cr. Wh.	H-102 B.B.	230	1200
2	300	G.E.	MPC	230	600
2	275	G.E. B.B.	TLC-108	250	2000/1000
1	225	G.E. B.B.		250	1150/3600
1	200	Rel. B.B.	T-663-D.P.	240	1150
1	200	Rel. B.B.	T-664-D.P.	210	850
2	200	Cr. Wh.	CR-207.4	240	850/1200
1	150	Cr. Wh.	CMC-65H	230	1150
1	150	G.E. B.B.	TLC-74	250	1150/2500
1	150	Rel. B.B.	T-663-D.P.	240	850/1700
1	150	G.E. B.B.	CD	250	500/1200
1	120	G.E. B.B.	TLC-50	250	1950/5000
1	125/150	New Whse.	CR-210.3	230	300/1200
1	120	Rel. B.B.	1950T	230	575/900
2	125	Whse.	SK-190	230	450/1200
1	125	Whse.	SK-185	230	250/1050
1	100	G.E.	CDP-115	230	1750
1	80	Whse.	SR-123.9	210	2000/4500
1	75	Rel. B.B.	T-663-D.P.	240	500/1000
1	75	G.E. B.B.	CD-1235-D.P.	600	850
1	60.75	Rel. B.B.	T-664-D.P.	210	200/1200
1	40	Rel. B.B.	TY 623	240	200/1200
1	25/30	Rel. B.B.	TY 567	240	200/1200
2	60	Rel. B.B.	T-406-D.P.	210	1750/2100
1	50	Rel. B.B.	T-405-D.P.	240	1750
1	40	Rel. B.B.	T-405-D.P.	240	1750
1	40	Rel. B.B.	285P. 732P.	230	500/1500
1	30.40	Rel. B.B.	T-564-D.P.	210	300/900

MERCURY ARC RECTIFIERS

3-150 KW. G.E. Sealed Tube Ignitron Unit Substation load centers 275 V. D.C., 2300 V. A.C. Pyranol filled transformers complete.
2-150 KW. G.E. Ignitron, 245 V. D.C.-230 V. A.C., air cooled transformers with controls.

MG SETS—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	DC Volts	AC Volts
1	2000	G.E.	514	600	2300/4600
2	1750/2100	G.E.	514	250/300	2300/4600
1	1750	G.E.	514	600	2300/4600
1	1500	G.E.	720	600	6000/13200
1	1500	G.E.	600	600	11000/6600
1	1500	S.S. 3 unit	720	600	11000/6600
1	1500	Cr. Wh.	4 unit	720	160
2	1000	G.E.	720	600	6000/13200
2	750	G.E.	720	250/300	6000/13200
1	500	G.E.	900	125/250	410
1	350	G.E.	900	125	410/1160
1	300	G.E.	1200	250	2300/4600
1	300	G.E.	1200	250	410/2300
1	240	Whse.	900	125	220/440
1	200	G.E.	1200	250	410/550
1	200	Whse.	1200	350	2300/4600
2	200	El. Mhy.	1200	250	2300/4600
1	150	G.E.	1200	275	2300
1	150	Whse.	1200	275	2300
1	150	G.E.	1200	125	410
1	140	Cr. Wh.	600	125/250	2300
1	125	G.E.	1800	250	220/440
1	100	G.E.	1170	250	220/440
1	100	Cr. Wh.	1800	240	410
2	100	Cr. Wh.	1160	325	220/550
1	100	G.E.	1200	250	2100/4100
2	75	Whse.	1200	125	410

TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltages
3	5533	Whse.	OTSC	1	13800/2200
1	1500	G.E. auto	ITT	2	4000/4200/4400
3	1000	G.E.	OA/FA	1	13800 x 230/460
2	750	G.E.	Pyranol	1	4800x65/55-255-165
3	500	Kuhl	OTSC	1	12200 x 6600
3	333	G.E.	HIS-W4R	1	2400/4160 240 x 480
3	333	G.E.	OTSC	2	2400/4160Y x 600
3	150	G.E.	OTSC	1	3300x2300/4000Y
3	100	Whse.	SK	1	6000x160 250 x 15

CRANE & MILL MOTORS

Qu.	H.P.	Make	RPM	Type
14	12/15	Whse.	700/600	MC-A-30, Series
1	20	Whse.	975	K-5, Series
2	23	G.E.	650	MDS-408
2	25	G.E.	725	CO-1808, Series
1	35	Whse.	480	CK-9 Comp. S.B.
1	35	Whse.	480	CK-9 S.B. R.B.
1	45	Whse.	600	CK-9 Comp. S.B.
3	50	G.E.	650	COM-1830 Comp.
3	50	Whse.	525	CK-9 Shunt R.B.
2	50	Whse.	600	CK-9 Comp. R.B.
1	50	G.E.	525	COM-1830AE R.B.
1	50	Cr. Wh.	550	SW-50 Comp.
1	100	G.E.	475	CO-1832 R.B.
6	100/140	Whse.	500/415	MC-90 R.B.

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THE CLEARING HOUSE

Sales Gains Continue In Midwest

Used machinery orders for September, while not as good as dealers had hoped, were still encouraging.

Inquiries are increasing, some prices are rising, and small shops are back in the market for heavy equipment.

Despite mild gains over the past three weeks, Midwest used machine tool dealers feel the best of the Fall market is still to come. Sales of mills, lathes, boring mills, and sheet metal equipment, have scored very slight gains over August levels. Which isn't bad news.

July was a good month, so was August, and September has shown some improvement. The gain in September sales hasn't been as strong as the relatively strong July-August sales levels had led many dealers to expect.

Prices Rise—If sales aren't showing the gains that had been expected, at least the used tool prices paid at auctions and to metalworkers who are selling off used equipment from their plants, are up and rising. This trend was mildly noticeable back in July. It seems to be gaining ground at a faster pace and has been increasing for at least 30 days.

Rebuilding Static—There is another factor that seems to affect the rebuild segment of the used industry more than any other. Builders experienced a good July spurt. At the moment, however, they've not

been able to progress much beyond the July business level.

A 40 hour week with some backlog is common with most rebuilders, but the backlog is not growing. One rebuilder comments, "This is the oddest situation I've been in. Our buyers either are willing to wait, or they are so darn busy they can't pull the machines off their production line, no matter how badly they need a rebuild job."

Small Shops Back—Smaller job shops, weak buyers in the July period, are now coming back in the market. Reflecting the same eagerness to hang onto what capital they have in hand, they are acutely conscious of price. The contrast is the attitude toward some pieces of heavy equipment. If the buyer needs heavy equipment, and needs it badly, price is much less important.

This rising interest in heavy equipment dates back to July. It has resulted in increased heavy equipment sales in the Chicago area and has tended to reduce the effect of lagging sales of light equipment.

Inquiries Gain—Foreign tools have held the gains they scored in July and appear to be moving up again. Their sales climb is no better than that for used equipment, but any gain at all is welcomed with open arms. Setting the tone for the entire used tool picture is an almost daily gain in the number of inquiries received. This, as much as any other factor, is beginning to convince Chicago dealers that when the used tool market breaks loose the upward rise will be swift.

CONSIDER GOOD USED EQUIPMENT FIRST

BENDING ROLLS

8" x 1/2" Bertsch Initial Type
12" x 3/4" Hillis & Jones Pyramid Type
12" x 1/2" Bertsch Initial Type-NEW
32" x 5/8" Baldwin Pyramid Type

BORING MILL—VERTICAL

144" Cincinnati Hypo Vertical Boring Mill
Two Squirrel Type Ram Heads

CRANES—OVERHEAD ELECTRIC TRAVELING

7 1/2 ton P&H 60' Span 230 Volt D.C.
8 ton P&H 55' Span 220/2/60
10 ton P&H 50' Span 230 Volt D.C.
10 ton P&H 50' Span 230 Volt D.C.
10 ton Milwaukee 57' Span 220 Volt D.C.
10 ton Shaw 48' Span 230 Volt D.C.
10 ton Whiting 73' Span 220/3/60 A.C.
10 ton Shaw 120' Span 230 Volt D.C.
15 ton P&H 50' Span 230 Volt D.C.
15 ton Northern 54' Span 230 Volt D.C.
15 ton Shepard Niles 50' Span 230 Volt D.C.
15 ton N-B-P 100' Span 220/3/60 A.C.
120 ton Shepard Niles 77' Span 220/3/60

DRAW BENCHES

3000 lb. Draw Bench, 20 ft. Pull
7000 lb. Draw Bench, 50 ft. Pull—New 1956
10,000 lb. Draw Bench, 50 ft. Draw—LATE

FORGING MACHINES

1" to 5" Acme Atlas National

HAMMERS—BOARD DROP—STEAM DROP—STEAM

FORGING 800 lb. to 12,000 lb. incl.

LEVELERS—ROLLER

54" McKay 17 Rolls 1 1/2" dia.
60" Acme Standard, 17 Rolls 1 1/2" dia.
72" McKay 15 Rolls 1 1/2" dia.
84" Hillis 17 Rolls 1 1/2" dia.

PLANNER—OPEN SIDE

70" x 110" x 16" Liberty Four Head

PRESSES—HYDRAULIC

500 ton Watson Stillman Piercing Press 48" x 72"
500 ton HPM Fastraverse, Bed 36" x 36"
600 ton Elmes 36" stroke, 48" x 45" Hot Cols.
1000 ton HPM Fastraverse, Bed 48" x 72", 30" Stroke
4500 ton B-L-H Bed 68x88", Stroke 40"

PRESSES—STRAIGHT SIDE

190 ton Toledo #57 1/2, 10" Stroke, Bed 20" x 29"
215 ton Clearing, 24" Stroke, Bed 36" x 42"

PRESS—TOGGLE DRAWING

210x3/4 Toledo, 18" Stroke of Blankholder, 26" Stroke
of Plunger, Bed 48" x 51"

PUNCH & SHEAR COMBINATIONS

Buffalo #1 1/2 Ironworker
Cleveland Style C Arch Jaw, Capy. 3/4" x 5/8"
Cleveland Style EF, Capy. 1 1/4" x 1"

ROLLING MILLS

6" x 5" Torrington Flat Wire Mill Line
3 1/4" x 7" Six Roll Cluster Mill
10" x 14" Single Stand Two High
10" x 16" Single Stand Two High
12" x 12" Single Stand Two High
12" x 16" Single Stand Two High
16" x 24" Single Stand Two High
20" x 36" Single Stand Two High

ROLL—FORMING

18 Stand Custom Built, 2 1/2" Shaft, will take 36" wide

ROLLS—PLATE STRAIGHTENERS

108" Bertsch, Seven Rolls 9" Dia.
22" Niles 2 Rolls 9" Dia. Motor Driven

SHEAR—ANGLE

6" x 6" x 5/8" Hillis & Jones

SHEAR LINES

36" x 620 G.A. Halden Shear Line
96" Cleveland, Capy. 34 G.A. Pay Off & Tables

SHEARS—SQUARING

6" x 14 Ga. Edwards, Motor Drive—LATE
10" x 3/4" Niagara
14" x 3/16" Cincinnati #1814

SLITTERS

12" Waterbury Farrel, 2 1/2" Dia. Arbor
30" Yoder M-2 1/2 Slitting Line
36" Yoder, 4 1/2" Dia. Arbor

STRAIGHTENERS

Torrington #1734 12-Roll, Capy. 1 1/2" Rd. 1-9-16"
Sq. etc.
Kane & Bosch #3250 5-Roll, Capy. 2 1/2" Solid,
3 1/2" Tube

SWAGING MACHINES

#14 Standard 2-Die, Capy. 2 1/2" Tube
#6 1/4 A Fenn Capacity 3 1/2 Tube 1 1/2" Solid
10" Die Length Hydraulic Feed, LATE

TESTING MACHINES

20,000 lb. Baldwin Univ. Hydraulic
50,000 lb. Baldwin Southwark Compression
60,000 lb. Olsen Univ. Hydraulic
100,000 lb. Olsen 3-Screw Universal

THREAD ROLLERS

No. 60 Waterbury Farrel, for vertical operation
No. 100 Waterbury Farrel Thread Roller

TUBE REDUCERS

1 1/2" Tube Reducer for steel
2 1/2" Tube Reducer for aluminum

WIRE DRAWING MACHINES

Type B Morgan 4-Block Capy. #5 Rod down
No. 1 & No. 2 Glader Nail Making Machines

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RAILWAY CARS

All Types

SERVICE TESTED FREIGHT CAR REPAIR PARTS

For All Types of Cars

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Diesel-Electric

SPECIAL

STANDARD GAUGE CARS

COVERED HOPPER CARS

10-70 ton Capacity

ORE HOPPER CARS

660 Cubic Feet

40- and 50-Ton Capacity

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3-Air-operated, Austin-Western

30-Cubic Yard

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6,000-, 8,000- and 10,000-Gallon

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AND LONG BEACH, CALIF.

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COMPLETE STRIP ROLLING MILL

Small Type, Still Set-Up In Plant

BLISS 4 Stand Tandem, continuous strip mill,
rolls 16" diameter x 24" face. Individual 250
h.p. D.C. variable speed motors & controls.
Equipped with motor driven recoiler.

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CAnel 6-2470

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Type IG 103 Grenby, m.d.
No. 5 Bryant, m.d., latest
Model 5Y Bryant, m.d.
No. 16—16" Bryant, m.d., hydraulic hole grinder
No. 16CR16 Bryant, m.d., latest
No. 16—22" Bryant, m.d., latest
No. 16—38" Bryant, m.d., latest
No. 16-A—28" Bryant, m.d.
No. 24—36" Bryant Hole & Face Type, m.d., late
No. 24-P—26" Bryant, m.d.
No. 24—21" Bryant, m.d.
No. 24-L—36" Bryant, m.d., late
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1*	2000	G.E.	459	132/265	4160/2400	4160
2*	2000	Whse.	720	600	13,800/6900	4160
2	1250	Whse.	720	600	4160/2400	4160
1	1250	G.E.	459	250	4160/2400	4160
2	1000	Whse.	720	600	4160/2400	4160
2	500	Whse.	1200	125/250	4000/2300	4160
1	450	Whse.	900	280/300	2300	4160
1	300	Whse.	1200	125/250	4000/2300	4160
1*	300	Al.Ch.	1200	250/300	2300	4160
3	200	Whse.	1200	125/250	2300	4160
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3**	2000	Whse.	Rev.	525/600	600	4160
1**	2200	Whse.	Mill	600	92/132	4160
8**	1500	Whse.	Rev.	525	600	4160
1**	1250	Al.Ch.	Mill	600	300/600	4160
2**	940	S.S.	Mill	600	800/1000	4160
1**	700	Whse.	Mill	600	143	4160
4**	700	Whse.	Rev.	250	300/700	4160
2**	645	S.S.	Mill	300	1000	4160
1	600	Whse.	Mill	250	110/220	4160
2	600	Al.Ch.	Mill	600	300/600	4160
1	400	G.E.	M.P.C.	270	450	4160
1	300	Whse.	Mill	250	300	4160
2	275	Whse.	Q.M. 660-B	250	425/850	4160
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1	125	Whse.	SK-184	230	575/850	4160
1	125	Whse.	SK-190	250	450/1000	4160
1	100	Rel.	461-T	250	1150/1500	4160
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1	80	Rel.	631-T	250	575/1150	4160
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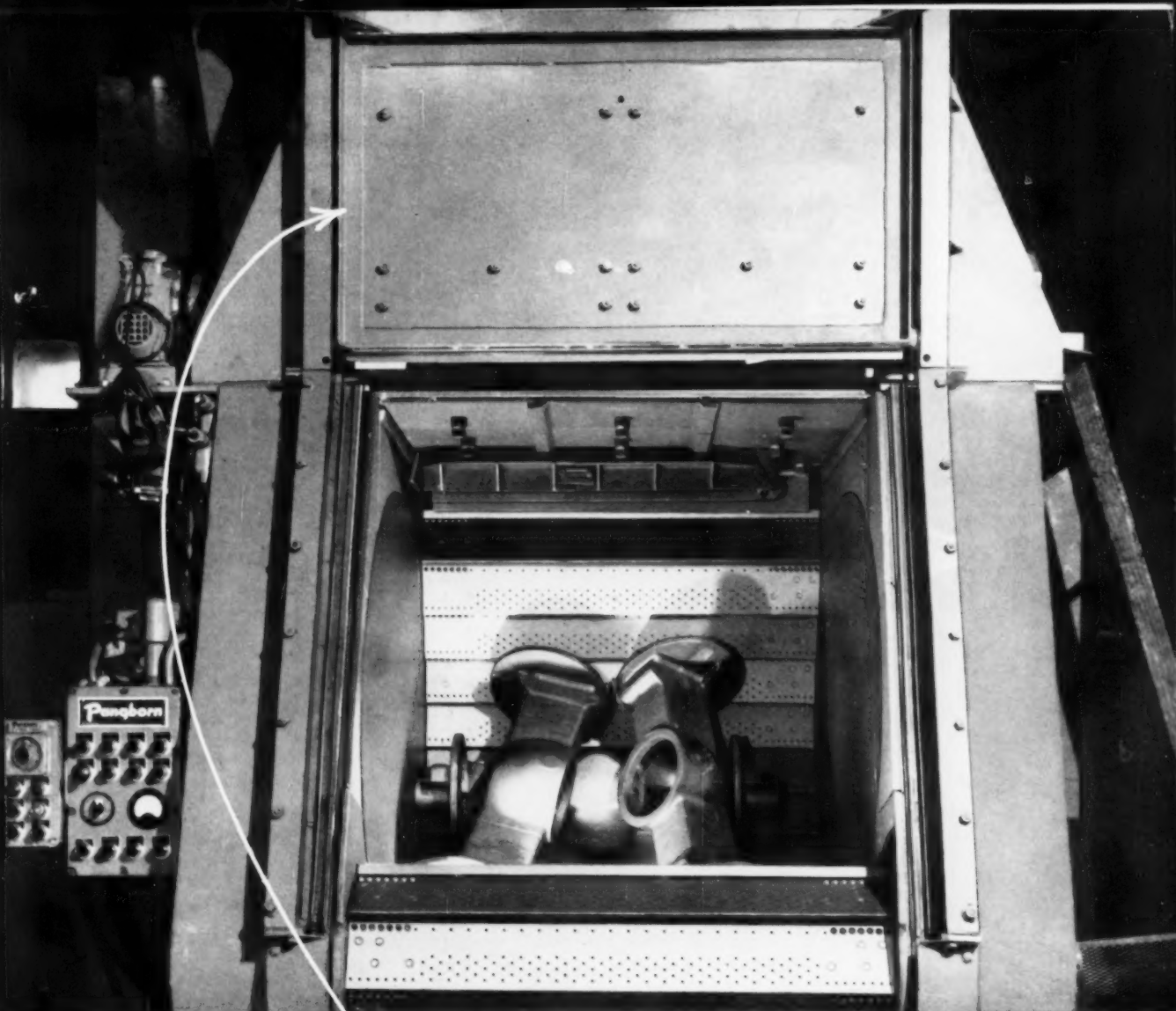
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A ACF Valves—W-K-M Div., ACF Industries, Inc. 49 *Alco Products Inc. 27 Allis-Chalmers Mfg. Co. Industrial Equipment Div. 111 *American Optical Co. 26 *American Welding & Mfg. Co., The 100 Armstrong Bros. Tool Co. 9 *Atlas Mineral Products Co. 11	Crucible Steel Casting Co. 105 Curtiss-Wright Corporation Metals Processing Division 20 D Davidson Pipe Co., Inc. 130 *Diamond Manufacturing Co. 93 *Duralay Co., The 13 E Eastern Electro-Casting Co., Ltd. 131 *Eastern Machine Screw Corp., The 95 Eastern Machinery Co., The 129 Eastern Stainless Steel Corp. 72 & 73 Espin-Lucas Machine Works, The 99 Ex-Cell-O Corporation Inside Front Cover	H Hardinge Mfg. Co. 132 Harrison Sheet Steel Co. 126 Haynes Stellite Company, Division of Union Carbide Corp. 10 Hayward Company, The 105 Hendrick Manufacturing Co. 96 Henry, A. T., & Company, Inc. 129 Huebel Mfg. Co., Inc. 132 Hughes, Arnold, Co. 131, 133 Hyman, Joseph, & Sons 130	*Potter & Johnston, Subsidiary of Pratt & Whitney Co., Inc. 51 Purdy Company, The 129 R Raco Industrial Corp. 131 *Republic Steel Corp. 22 & 23 Roebbling's, John A., Sons Corp. 32 Rosedale Foundry & Machine Co. 131 Ryerson, Jos. T., & Son, Inc. 6
B Babcock & Wilcox Co., The Tubular Products Div. 4 Baldt Anchor, Chain & Forge Div. 133 Bearings, Inc. 48 Belyea Co., Inc. 128 Bertsch & Company 126 Bethlehem Steel Co. 1 Bolling Stewart & Co., Inc. 131 Boston Metals Company 130 *Bridgeport Brass Co. 52 Bullard Co., The 57	F Falk Machinery Co. 131 *Farvel Corporation 38 Finkl, A., & Sons Co. 33 *Foote Mineral Co. 17 Formed Steel Tube Institute 91 Foster, Frank B., Inc. 130 Frank, M. K. 129	I *Ingersoll Kalamazoo Division, Borg-Warner Corp. 115 *Inland Steel Co. 36 Iron & Steel Products, Inc. 129 J *Jeffrey Mfg. Co., The 25 Jones & Laughlin Steel Corporation 108 Jones & Laughlin Steel Corp., Stainless & Strip Division 54	S Saling Manufacturing Company .. 133 Sieburg Industries, Inc. 131 Smith, Thomas, Co. 133 Steel & Tube Div., The, Timken Roller Bearing Co. Back Cover Stump, Weldon F., & Co. 131
C *Cambridge Wire Cloth Co. 98 Carco Industries, Inc. 133 Cattie, Joseph P., & Bros., Inc. 126 *Cincinnati Milling Machine Co., The, Milling Machine Div. 60 Climax Molybdenum Co. 58 Colorado Fuel & Iron Corp., The Wickwire Spencer Steel Div. 105 Commercial Die Co. 133 Consumers Steel & Supply Company 133 *Cowles Tool Co. 113 Cox & Sons Co., The 130	G Gates Rubber Co. 16 *General Electric Co., Apparatus Dept. 34 & 35 *General Electric Co., Computer Dept. 21 Goss & DeLeeuw Machine Co. 134 Great Lakes Steel Corp. 133 Greenpoint Pipe Supply Corp. 131 Greist Manufacturing Co., The 132 *Gulf Oil Corp. 18 & 19	K Keystone Forging Company 132 King Foundries, Inc. 131 L Lang Machinery Co., Inc. 130 Lilly, Eli, & Co. 14 & 15 *Lodge & Shipley Co. 29 Logan Co. 107 Luria Bros. & Co., Inc. 117	T Timken Roller Bearing Co., The, Steel & Tube Division Back Cover Tinnerman Products, Inc. 64 *Torrington Co. 74 Torrington Mfg. Co., The 97 U *Udylite Corp., The 5 & 24 Union Carbide Corp., Haynes Stellite Division 10 United States Steel Corp. 28 Universal Machinery & Equipment Co. 130
Z I N C STRIP AND WIRE ZINC METALIZING WIRE ZINC ACCURATELY ROLLED for electric fuse elements THE PLATT BROS. & CO., WATERBURY 20, CONN.		M MacCabe, T. B., Co. 130 Mahon, R. C., Co., The 132 Miles Machinery Co. 131 Modern Heat Treating Co. 133	V Valley Steel Products Co. 133 *Van Huffel Tube Corporation .. 62 W *W-K-M Div. of ACF Industries, Inc. 49 Wallack Bros. 133 Weatherly Foundry & Mfg. Co. 133 *Weirton Steel Co. 67 Weiss, B. M., Co. 130 Weiss Steel Co., Inc. 133 *Westinghouse Air Brake Co., Industrial Products Div. 8 Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp. 105 Wilcox Forging Corp. 133
GOSS and DE LEEUW MULTIPLE SPINDLE CHUCKING MACHINES Four, Five, Six, Eight Spindles • Work and Tool Rotating Type GOSS & DE LEEUW MACHINE CO., KENSINGTON, CONN.		N National Business Bourse, Inc. 133 National Machinery Exchange .. 129 National Steel Corp. 67 New England Pressed Steel Co. 131 *Niagara Machine & Tool Works 71 Northern Engineering Works 92 O Olson Manufacturing Co. 137 P Pangborn Corp. 12 & Inside Back Cover Pittsburgh Steel Co. 30 & 31 Platt Bros. & Co., The 134 *Poole Foundry & Machine Co. .. 126	Y Yuba Consolidated Ind., Inc. 133 CLASSIFIED SECTION Clearing House 128-131 Contract Manufacturing 132-133 Employment Exchange 133 Equipment & Materials Wanted 133



When this door comes down . . . so does your blast cleaning cost!

Abrasive-tight door on Rotoblast Barrel slashes "lost abrasive" costs

Pangborn Rotoblast Barrel for efficient batch cleaning. Available in 1½, 3, 6, 12, 18, 20, 32, 72 and 102 cubic foot sizes.

Look at it. That door on the Pangborn Rotoblast Barrel is engineered to prevent waste. Heavy steel plates . . . an exclusive arrangement that permits raising the door for easy maintenance . . . clamp-closing to make it really abrasive-tight! As a result, here is another way that Pangborn Rotoblast Barrels save you money.

This door is just one of the many benefits built into Rotoblast Barrels. Efficient Rotoblast operation, for example. Automatic

control. Ease of maintenance. Plus specific construction features that all add up to *better* cleaning in *less* time for *lowest* cost per ton.

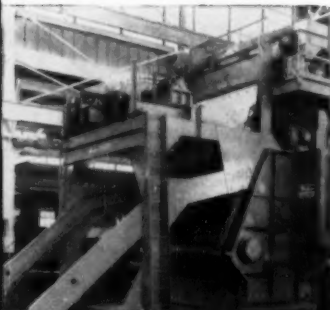
The Pangborn Engineer in your area will be glad to take off his coat and go to work on your cleaning problem at no obligation. And for complete information on Rotoblast Barrels, write to: Pangborn Corp., 1500 Pangborn Blvd., Hagerstown, Md. Manufacturers of Blast Cleaning & Dust Control Equipment.



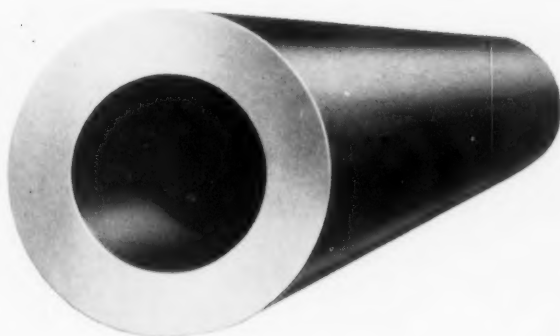
Clean it fast with

Pangborn[®]

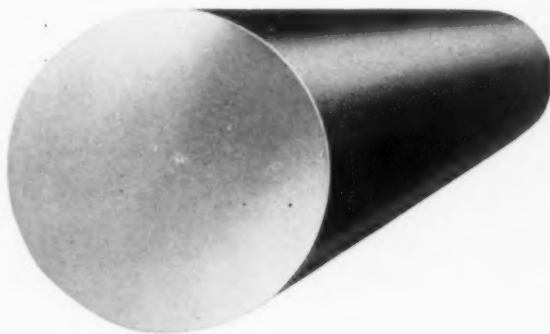
ROTOBLAST[®]



**Start with
a hole . . .**



**instead of
a headache**



Start with TIMKEN® seamless tubing and save steel, machining time

BORING out bar stock to make hollow parts is a waste of steel and valuable machining time. Besides, it's a headache. The remedy is Timken® seamless steel tubing with *the hole already there*. You pay only for the steel you use. On top of this saving, you cut machining costs. By eliminating that unnecessary boring operation you free part of your screw machines for other jobs—add machining capacity without adding machines.

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mandrel, thoroughly working the metal inside and out. It's this rotary piercing operation that gives Timken seamless steel tubing its fine forged quality and uniform spiral grain flow for extra strength. Carefully controlled temperature and piercing speed keep this quality uniform from tube to tube, heat to heat, bar to bar.

We can help you increase your steel savings by having our engineers recommend the most economical tube size for your hollow parts job. They'll give you a size guaranteed to clean up to your finished dimensions. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable: "TIMROSCO".

TIMKEN *Fine Alloy* **STEEL**

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SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING